

Volume 154

July-December 1978

NATIONAL GEOGRAPHIC

INDEX

July-December 1978

VOLUME 154

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
WASHINGTON, D. C.

NATIONAL GEOGRAPHIC SOCIETY

WASHINGTON, D. C.

Organized "for the increase and diffusion of geographic knowledge"

GILBERT HOVEY GROSVENOR

Editor, 1899-1954; President, 1920-1954
Chairman of the Board, 1954-1966



THE NATIONAL GEOGRAPHIC SOCIETY is chartered in Washington, D. C., in accordance with the laws of the United States, as a nonprofit scientific and educational organization. Since 1890 the Society has supported 1,606 explorations and research projects, adding immeasurably to man's knowledge of earth, sea, and sky. It diffuses this knowledge through its monthly journal, NATIONAL GEOGRAPHIC; its books, globes, atlases, filmstrips, and educational films; National Geographic WORK, a magazine for children age 8 and older; information services; technical reports; exhibits in Explorers Hall; and television.

ROBERT E. DOYLE, President
GILBERT M. GROSVENOR, Vice President
OWEN R. ANDERSON, Vice President and Secretary
HILLEARY F. HOSKINSON, Vice President and Treasurer
WILLIAM T. BELL, FRANK S. DELK,
LEONARD J. GRANT, RAYMOND T. McELLIGOTT, JR.,
C. VERNON SANDERS, EDWIN W. SNIDER
Associate Secretaries

BOARD OF TRUSTEES

MELVIN M. PAYNE, Chairman of the Board
LLOYD H. ELLIOTT, Vice Chairman
President, George Washington University
MELVILLE BELL GROSVENOR, Chairman Emeritus
THOMAS W. MCKNEW, Advisory Chairman

THOMAS E. BOLGER
Executive Vice President, American Telephone & Telegraph Company
FRANK BORMAN, Chairman of the Board and President, Eastern Airlines
J. CARTER BROWN, Director, National Gallery of Art
WARREN E. BURGER
Chief Justice of the United States
ROBERT E. DOYLE, President, National Geographic Society
GEORGE M. ELSEY, President, American National Red Cross
GILBERT M. GROSVENOR
Editor, National Geographic
ARTHUR B. HANSON, General Counsel, National Geographic Society
CARYL P. HASKINS, Former President, Carnegie Institution of Washington
JEROME H. HOLLAND
Former U. S. Ambassador to Sweden
CARLISLE H. HUMELSINE
Chairman of the Board, The Colonial Williamsburg Foundation

MRS. LYNDON B. JOHNSON
CURTIS E. LEMAY, Former Chief of Staff, U. S. Air Force
WM. MCCLESNEY MARTIN, JR.
Former Chairman, Board of Governors, Federal Reserve System
LAURANCE S. ROCKEFELLER
President, Rockefeller Brothers Fund
ROBERT C. SEAMANS, JR.
Dean of the School of Engineering, Massachusetts Institute of Technology
FREDERICK G. VOSBURGH
Former Editor, National Geographic
JAMES H. WAKELIN, JR., Former Assistant Secretary of Commerce for Science and Technology
JAMES E. WEBB, Former Administrator, National Aeronautics and Space Administration
CONRAD L. WIRTH, Former Director, National Park Service
Trustees Emeritus
CRAWFORD H. GREENEWALT
JUAN T. TRIPPE
ALEXANDER WETMORE
LOUIS B. WRIGHT

COMMITTEE FOR RESEARCH AND EXPLORATION

MELVIN M. PAYNE, Chairman
EDWIN W. SNIDER, Secretary
ALEXANDER WETMORE, Chairman Emeritus
BARRY C. BISHOP, National Geographic Staff, ROBERT E. DOYLE, GILBERT M. GROSVENOR, MELVILLE BELL GROSVENOR, CARYL P. HASKINS, STERLING B. HENDRICKS, Scientist Emeritus, U. S. Department of Agriculture, THOMAS W. MCKNEW, BETTY J. MEGGERS, Research Associate-Anthropology, Smithsonian Institution, T. DALE STEWART, Physical Anthropologist Emeritus, Smithsonian Institution, GEORGE E. STUART, FREDERICK G. VOSBURGH, JAMES H. WAKELIN, JR., GEORGE E. WATSON, Curator of Birds, Smithsonian Institution, RANK C. WHITMORE, JR., Research Geologist, U. S. Geological Survey, CONRAD L. WIRTH, LOUIS B. WRIGHT, and PAUL A. ZAHL, Former Senior Scientist, National Geographic Staff

ASSISTANT SECRETARIES OF THE SOCIETY: Joseph B. Hogan, James P. Kelly, Adrian L. Loftin, Jr., Lewis P. Lowe, Ward S. Phelps, Clotis Pride

ASSISTANT TREASURER: Alfred J. Hayre. Assistants to the President: Earl Corliss, Jr., Richard E. Pearson. Administrative: D. Evelyn Carnahan, Janet C. Soper

SECRETARY'S STAFF: Accounting: Martha Allen Baggett, Dorothy L. Dameron, Jay H. Givans, Laura L. Light, William G. McGhee, George E. Newstedt, David H. Peters. Administration: Ruth E. Clark, Frederick C. Gale, Robert V. Koenig, Zbigniew Jan Lutyk, Joyce S. Sanford, Karen F. Shrewsbury, Frank M. Twigger. Computer: James G. Schmelzer. Educational Services: Wendy G. Rogers, Carl W. Harmon, Jr. Employee Benefits: Howard R. Hudson, Mary L. Whitmore. Explorers Hall: Peter Purpura. Membership Services: Margaret L. Bassford, Robert C. Dove, Erma T. Goetzinger, William T. McDonnell, Jimmie D. Pridmore, Charles P. Thomas, Paul B. Tyler, Dorothy M. Wagner, Marguerite M. Wise, Peter F. Woods. Personnel: Thomas L. Hartman, M. D., Robert E. Howell, Glenn G. Pepperman, Shirley N. Wilson. Printing: Joe M. Bartlett, Frank S. Oliverio, Wilhelm R. Saake, Hans H. Wegner. Promotion: Charles T. Kneeland, Robert J. Warfel, Eileen B. Bowering, Robert L. Feig, Joseph S. Fowler, Thomas M. Kent, F. William Rath, Towne Windom. Purchasing: Robert G. Corey, Thomas L. Fletcher, Sheila H. Immel

ADVERTISING: Director: James L. Till, 1251 Avenue of the Americas, New York 10020. Asst. to Director: Blanche Coffey. Regional managers—Eastern: George W. Kellner, New York. Midwestern: Robert R. Henn, Chicago. San Francisco: Cecil H. London. Los Angeles: Richard H. Lehman. Detroit: George E. Moffat. Canada: Robert W. Horan, New York. International: John F. Grant, New York. Travel: Gerald A. Van Splinter, New York. European Director: Michel A. Boutin, Paris. Business Manager: Peter W. Michaels. Production Manager: G. Sarita Lapham

COPYRIGHT © 1979 National Geographic Society, 17th and M Sts. N.W., Washington, D. C. 20036.

MELVIN M. PAYNE Chairman of the Board
ROBERT E. DOYLE President of the Society
MELVILLE BELL GROSVENOR Editor Emeritus

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT M. GROSVENOR Editor

W. E. GARRETT Associate Editor, Illustrations
JOSEPH JUDGE Associate Editor, Text

SENIOR ASSISTANT EDITORS

James Cerruti, Free-lance Articles
Robert E. Gilka, Photography
Edward J. Linehan, Manuscripts
O. Louis Mazzatenta, Layout
Carolyn Bennett Patterson, Legends
Kenneth F. Weaver, Science
Herbert S. Wilburn, Jr., Control Center
Richard J. Darley, Cartography
William Graves, Expeditions
Samuel W. Matthews, Production
Howard E. Paine, Art
Thomas R. Smith, Illustrations
Ann K. Wendt, Research

TEXT

ASSISTANT EDITORS: Rowe Findley, Allan C. Fisher, Jr., Robert P. Jordan, Bart McDowell, Elizabeth A. Moize, Merle Severy

SENIOR WRITERS: Thomas J. Abercrombie, David S. Boyer, William S. Ellis, Howard La Fay, John J. Putnam, Volkmar Wentzel, Peter T. White

SENIOR EDITORIAL STAFF: Harvey Arden, Kent Britt, Thomas Y. Canby, Mike Edwards, Boyd Gibbons, Rick Gore, Noel Grove, Alice J. Hall, Bryan Hodgson, Ethel A. Starbird, Gordon Young

EDITORIAL STAFF: Robert Booth, John L. Eliot, David Jeffery, Michael E. Long, John L. McIntosh, George E. Stuart, Priti J. Vessilind

RESEARCH: Frances H. Parker (Associate Chief); Carolyn H. Anderson, Susan L. Anderson, Judith Brynes, Susan P. Byrnes, Susan Day Fuller, Ann B. Henry, Jan Holderness, Patricia B. Kellogg, Jean B. McConville, Jeanne E. Peters, Lesley B. Rogers, Frances W. Shaffer, Style: Michaeline A. Sweeney. Geographic Information: Bette Joan Goss. Legends: Abigail A. Tipton

ILLUSTRATIONS

PHOTOGRAPHERS: Dean Conger, Joseph J. Scherschel (Assistant Directors); James L. Amos, James P. Blair, Victor R. Boswell, Jr., Jodi Cobb, Bruce Dale, Gordon W. Gahan, David Alan Harvey, Otis Imboden, Emory Kristof, Blanca Lavies, Bates Littlehales, Robert W. Madden, George F. Moberly, Robert S. Onkes, Steve Raymer, Robert F. Sisson (Natural Science), James L. Stanfield. Administration: John E. Fletcher, Guy W. Starling

ILLUSTRATIONS EDITORS: W. Allan Royce (Assistant Chief); David L. Arnold, Taylor Gregg, Declan Haun, H. Edward Kim (Layout), Charlene Murphy, Robert S. Patton, Elie S. Rogers, Jon Schneberger, Mary Griswold Smith (Research Projects), Picture Editor: Bruce A. McElfresh

ART: William N. Palmstrom (Chief); Walter C. Crowe, John D. Garst, Jr. (Assistant Chiefs), Artists: Lisa Biganzoli, William H. Bond, John W. Lothers, Robert C. Magis, Jaime Quintero, Ned M. Seidler. Cartographic Artist: Snejinka Stefanoff. Map Editor: John T. Blozis. Research: Virginia L. Baza, Harold A. Hanson, Dorothy A. Nicholson. Production: Isaac Ortiz (Supervisor); Iskandar Baday, Elie Sabban, Alfred L. Zebarth, Leo B. Zebarth

DESIGN: Charles C. Uhl, Robert E. Pullman, Betty A. Clayman

ENGRAVING AND PRINTING: Dee J. Andella (Director); William W. Smith (Assistant Director); John T. Dunn, John R. Metcalfe, James R. Whitney

CARTOGRAPHY

John F. Shupe (Associate Chief); Ted Duchtera, Richard K. Rogers (Assistant Chiefs); John F. Dorr (Art Director); Margery K. Barkdull, Charles F. Case, Russel G. Fritz, Charles W. Gotthardt, Jr., Thomas L. Gray, Catherine M. Hart, Donald A. Jaeger, Harry D. Kaulhane, Mary Anne McAleer, Charles L. Miller, Robert W. Northrop, Charles L. Stern, Douglas A. Strobel, Tibor G. Toth, Thomas A. Wall, Thomas A. Walsh

EDITORIAL SERVICES

ADMINISTRATION: Joyce W. McKean (Assistant to the Editor), Elaine R. Chisman, Lilian Davidson, Virginia H. Finnegan, Mary F. Klemann, Lucille L. McInerney, Shirley Neff, Barbara A. Shattuck, M. Jean Vile. Correspondence: Carolyn F. Ciewell, Clifford R. DuBois. Indexes: Jolene M. Blozis

PHOTOGRAPHIC LABORATORIES AND TYPESETTING: Carl M. Shrader (Chief); Milton A. Ford (Associate Chief); Lawrence F. Ludwig (Assistant Chief); Herbert Altamas, Jr., David H. Chisman, Ellwood M. Kohler, Jr., Geoffrey T. McConnell, William S. Petrin, Claude E. Perrone, Joan S. Simms (Assistant)

LIBRARIES: Publications: Virginia Carter Hills (Librarian); Patricia Murphy Smith, Carolyn Locke, Louise A. Robinson, Maria Strada. Illustrations: L. Fern Dame, Carolyn J. Harrison. Records: Lorie Northrop, Mary Anne McMillen. Films: Betty G. Kotcher

RELATED EDUCATIONAL SERVICES OF THE SOCIETY

SENIOR ASSISTANT EDITORS

Julius B. Billard, Book Service
Robert L. Breeden, Special Publications and School Services

BOOK SERVICE: Thomas B. Allen, Seymour L. Fishbein (Associate Chiefs); Ross Bennett, Constantine Brown Boltz, Mary H. Dickinson, Robert C. Firestone, Mary Swain Hoover, Charles O. Hyman, Anne Dirkes Kobor, J. Edward Lanouette, Carol Bittie Lutyk, David F. Robinson, Shirley Scott, Margaret Seden, Verla Lee Smith

SPECIAL PUBLICATIONS AND SCHOOL SERVICES: Donald J. Crump (Associate Chief); Philip B. Silcott (Assistant Chief); William L. Allen, Jody Bolt, Toni Eugene, Ron Fisher, William R. Gray, Sallie M. Greenwood, Mary Ann Harrell, Suzanne J. Jacobson, Geraldine Linder, Lee Loftin, Louisa V. Magazanian, Tom Melham, Robert Messer, Jennifer C. Uraguath, Ursula Perrin Vosseler, George V. White, Merrill Windsor. National Geographic WORLD: Ralph Gray (Editor); Ellen Joan Hurst, Margaret McKelway, Pat Robbins, Eleanor Shannahan, Veronica Smith. Books for Young Explorers: Cynthia Abrams, Filmstrips: Jimmie Abercrombie, James B. Caffrey, Margery G. Dunn, Jacqueline Geschickter, Jane R. McCauley, H. Robert Morrison, George Peterson, Judith E. Kinard, Joan Ann Straker

NEWS SERVICE: Paul Sampson (Chief); Donald J. Frederick, William J. O'Neill, Robert C. Radcliffe. TELEVISION AND EDUCATIONAL FILMS: Dennis B. Kane (Chief); Marjorie M. Moomey (Research); Patricia F. Northrop (Promotion); Sidney Platt (Educational Projects); Georgos N. Lampathakis, Carl E. Ziebe. LECTURES: Joanne M. Hess (Chief); Robert G. Fieglal, Mary W. McKinney, Gerald L. Wiley. RECORDINGS: John M. Lavery (Chief). AUDIOVISUAL: Jon H. Larimore

Contents

Page

JULY 1978

EDITOR'S PAGE	1
THE GRAND CANYON	2
A portfolio by W. E. Garrett	
ARE WE LOVING IT TO DEATH?	16
Article and photographs by W. E. Garrett	
Double map supplement included— <i>The Heart of the Grand Canyon</i> , and photomosaic of the entire canyon	
VOYAGER'S HISTORIC VIEW OF EARTH AND MOON	53
REGAL TREASURES FROM A MACEDONIAN TOMB	55
By Manolis Andronicos, with photographs by Spyros Tsavdaroglou	
DAY OF THE RICE GOD	78
Photographs by H. Edward Kim, with text by Douglas Lee	
<i>A folk festival in rural Japan</i>	
YESTERDAY LINGERS ON LAKE ERIE'S BASS ISLANDS	86
Article and photographs by Terry and Lyntha Eiler	
GIANTS THAT MOVE THE WORLD'S OIL: SUPERSHIPS	102
By Noel Grove, with photographs by Martin Rogers	
SUPERSPILL: BLACK DAY FOR BRITTANY	124
Photographs by Martin Rogers, with text by Noel Grove	
DAZZLING CORALS OF PALAU	136
Photographs by Douglas Faulkner, with text by Thomas O'Neill	

AUGUST 1978

EDITOR'S PAGE	151
A NEW LOOK AT DINOSAURS	152
By John H. Ostrom, with paintings by Roy Andersen	
ALUMINUM, THE MAGIC METAL	186
By Thomas Y. Canby, with photographs by James L. Amos	
GEORGIA, UNLIMITED	212
By Alice J. Hall, with photographs by Bill Weems	
NEW ZEALAND'S HIGH COUNTRY (SOUTH ISLAND)	246
Article and photographs by Yva Momatiuk and John Eastcott	
NORWAY'S STRATEGIC ARCTIC ISLANDS (SVALBARD)	267
By Gordon Young, with photographs by Martin Rogers	
MOUNTAIN GOATS: DARING GUARDIANS OF THE HEIGHTS	284
Article and photographs by Douglas H. Chadwick	

SEPTEMBER 1978

EDITOR'S PAGE	297
SOLO TO THE POLE	298
By Naomi Uemura, with photographs by the author and Ira Block	
SYRIA TESTS A NEW STABILITY	326
By Howard La Fay, with photographs by James L. Stanfield	
Double map supplement included— <i>Middle East and</i> <i>Early Civilizations in the Middle East</i>	
UNDERSEA WONDERS OF THE GALAPAGOS	363
By Gerard Wellington, with photographs by David Doubilet	
A MOST UNCOMMON TOWN: COLUMBUS, INDIANA	383
Photographs by J. Bruce Baumann, with text by David Jeffery	
THE JOY OF PIGS	398
By Kent Britt, with photographs by George F. Mobley	
NEW MEXICO'S MOUNTAINS OF MYSTERY (SANGRE DE CRISTO)	416
By Robert Laxalt, with photographs by Craig Aurness	

OCTOBER 1978	Page
EDITOR'S PAGE	437
CONVERSATIONS WITH A GORILLA	438
By Francine Patterson, with photographs by Ronald H. Cohn	
DREAM ON, VANCOUVER	467
By Mike Edwards, with photographs by Charles O'Rear	
LAND OF LONG SUNSETS: NEBRASKA'S SAND HILLS	493
By John Madson, with photographs by Jodi Cobb	
DJIBOUTI, TINY NEW NATION ON AFRICA'S HORN	518
Picture story by Marion Kaplan	
TRAVELS WITH A DONKEY—100 YEARS LATER	535
By Carolyn Bennett Patterson, with photographs by Cotton Coulson	
<i>Robert Louis Stevenson's trip through the Cévennes region of France is retraced</i>	
THE SUNKEN TREASURE OF ST. HELENA (WITTE LEEUW)	562
By Robert Sténuit, with photographs by Bates Littlehales	
 NOVEMBER 1978	
EDITOR'S PAGE	577
PILGRIMAGE TO MECCA	581
By Muhammad Abdul-Rauf, with photographs by Mehmet Biber	
WASHINGTON'S YAKIMA VALLEY	609
By Mark Miller, with photographs by Sisse Brimberg	
NATURAL GAS: THE SEARCH GOES ON	632
By Bryan Hodgson, with photographs by Lowell Georgia	
WHERE THE RIVER SHANNON FLOWS	652
By Allan C. Fisher, Jr., with photographs by Adam Woolfitt	
THE NATIONAL GALLERY'S NEW MASTERWORK ON THE MALL	680
By J. Carter Brown, with photographs by James A. Sugar	
TREASURES OF DRESDEN	702
By John L. Eliot, with photographs by Victor R. Boswell, Jr.	
FLASHLIGHT FISH OF THE RED SEA (PHOTOBLEPHARON)	719
By Eugenie Clark, with photographs by David Doubilet	
 DECEMBER 1978	
EDITOR'S PAGE	729
EBLA: SPLENDOR OF AN UNKNOWN EMPIRE	730
By Howard La Fay, with photographs by James L. Stanfield	
and paintings by Louis S. Glanzman	
ONTARIO, CANADA'S KEYSTONE	760
By David S. Boyer, with photographs by Sam Abell and the author	
Map supplement included— <i>Close-up: Canada: Ontario</i>	
SMALLPOX—EPITAPH FOR A KILLER?	796
By Donald A. Henderson, with photographs by Marion Kaplan	
TIGRIS SAILS INTO THE PAST	806
By Thor Heyerdahl, with photographs by Carlo Mauri and the crew of the <i>Tigris</i>	
WINTERKEEPING IN YELLOWSTONE	829
Article and photographs by R. Steven Fuller	
DOUBLE EAGLE II HAS LANDED! CROSSING THE ATLANTIC BY BALLOON	858
By Ben L. Abruzzo with Maxie L. Anderson and Larry Newman	

July pp. 1-150
 August pp. 151-296
 September pp. 297-436

October pp. 437-576
 November pp. 577-728
 December pp. 729-882

Titles and illustrations in bold face

A

- Abbadi, Samir 361
 Abbe, Lake, Djibouti: Limestone spires **530-531**
 Abbott, Arthur J. **492**, 493, 499, 503, 508
 Abbott, Chris **492**, 493, **503**
 Abbott, Diane **503**
 Abbott, Kim **492**, 503
 Abbott, Mike 503
 Abbott ranch, Cherry County, Nebr. **492**, 493, 499, **502-503**, 508, **514-515**
 Abdul-Aziz al-Saud, King (Saudi Arabia) 591
 Abdul-Rauf, Aisha 581, 584, 585
 Abdul-Rauf, Faisal 581, 584
 Abdul-Rauf, Muhammad: *Pilgrimage to Mecca*. Nov., 581-607
 Abell, Sam, photographer: *Ontario: Canada's Keystone*. Dec., 760-795
 Abeyta, Bernardo 425
 Abraham (patriarch) 340, 585, 589; Islam revealed to 581, 589; Migration theory: Dates given: Biblical scholars 736, Muslim scholars 736; Pilgrimages instituted by 581, 582; Sacrifice of Isaac (Bible) 600; Sacrifice of Ishmael (Koran) 589, 600; Shrine built by 582, 584, 585, 588, 589
 Abruzzo, Ben L.: *Double Eagle II Has Landed! Crossing the Atlantic by Balloon*. Dec., 858-882
 Abruzzo, Pat 872
 Academy Bay, Santa Cruz (island), Galapagos Islands 373, 379
 Achkar, Philippe 349
 Acri, Gordon 773
 Adams, Leo **626**; Studio-home **626**
 Adaptation: Kaibab squirrel 41, 44
 Aden, Luc and Thérèse, and family 532
 Aden, Gulf of **826-827**; *Tigris* voyage, end of 812, 826, burning of ship **826**, **827**
 Adler, Leopold, II 241
 Adobe buildings: Sangre de Cristo region, N. Mex. 416, 417, 426, **430-431**, 436
 Adolph Coors brewing company: Aluminum recycling 204
 Aegae (ancient capital), Macedon 63, 64; Gallic sack of 63-64, 70
 Afars (people) 519, 520, **523**, **533**
 Afran *Zodiac* (VLCC) 193, 124; Captain 103, 104, **104**, 117; Crew 117, size 107; Deadweight tons (dwt) 164; Navigational aids 103, **104**, 117; Size 103, 104
 Africa: Routes around: East India trade 562, 564, oil tankers 107; Smallpox eradication 800; *see also* Djibouti
 Agency for International Development (AID): Smallpox eradication 798, 804
 Agricola (cabin cruiser) 656, 663, 664, 665, 667
 Agriculture: Georgia 228, 229-230, **231**, **238**, **239**; Ontario 776-777, **777-779**; Pig farming 410, 411; Syria 338-339, **348-349**, **352**, 353, 355, 357; *Washington's Yakima Valley*. By Mark Miller. Nov., 609-631; *see also* Cattle and cattle raising; Fruit and fruit growing; Rice growing; Sheep and sheep raising
 Ahalt, Larry, and wife 204
 Ahtanum Ridge, Wash. **624-625**
 Air lift (vacuum device): Underwater archeology 568, 570, 574
 Aircraft **523**, **582-583**; Amphibious 487; Boeing 747 **210-211**; DC-3 **301**; Floatplanes 468, **474**; Fokker trimotor 302; Ford Trimotor 90, **91**, 92; Gates Learjet **619**; Helicopters 17, 20, 28, **31**, 40, 41, 127, **190**, 271, 277, 278; Piper Super Cub 493, *Pogo* 16, 24, **26-27**; Ski-equipped 304, 309, **310**, 314, 317; *see also* Balloons
 Akiyama, Kazuyoshi 491
 Akkad (ancient empire): Conquests 326, Ebla 732-733, 741, Sumer 748
 Alaska: Methane-hydrate deposits 650; Natural-gas pipeline, proposed 634; North Slope oil production 635; Oil-pipeline terminal 104, 118; Supertankers **105**, 108, 118
 Albertinum museum, Dresden, East Germany: Green Vault 706, **708**, 710, **712-713**, 717, curator 709-710, 713, 717
 Albrechtsburg, Meissen, East Germany 711, 713
 Albuquerque, N. Mex.: Balloonists 860, 882, **882**
 Alcoa *see* Aluminum Company of America
 Alcoholism research: Pigs 412-413
 Aleppo, Syria 340-341, **358-359**, 731, 737; Roman road near **360-361**
 Aleppo (ancient city): Ruins **358-359**, 737, **736-737**
 Alert, Canada: Arctic expedition: Base camp **300**, 301, 319
 Alexander the Great 55, 62, 76, 339; Ivory portrait **62**, 75
 Algae: Galapagos Islands 363, 372, 374, 379; Hot springs 839, 845, 848; Lake Erie **93**; Red tide **824**
 Algonquin Provincial Park, Ontario 788
 Ali Maow Maalin 797, 804, **805**
 Ali Sabieh, Djibouti: Refugee camp **528-529**
 Allen, Lough, Ireland 661; Farmland near **658**, **659**
 Allerton, Michael 490-491
 Allier River, France 548
Allosaurus (dinosaur) **155**
 Allotment Act of 1877 624
 Alloys: Aluminum 188, 193
 Almeida, Dom Geronimo de 562, 566
 Alphabet, Ugaritic 341, **754**
 Al-Qalah, Aleppo, Syria 340
 Alto, Ga.: Roadside stand **231**
 Alumina 192, 195, 196, 198, 201, 656; Smelting: Diagram **192-193**
 Alumina Partners of Jamaica: Strip mine **194-195**
 Aluminum 151; *Aluminum, the Magic Metal*. By Thomas Y. Canby. Aug., 186-211
 Abundance 192, 195
 Aluminum objects 188, 200; Artwork 188, **198**, '99, 200; Violin **200**
 Automobiles, use in 189, 203, **205**
 Bauxite 192, 194, 196, 198, 200-201; Mines **194-195**, 198; Reserves, world 200
 Boats 186, **202-203**, 203
 Casting 193, **196-197**
 Construction industry 188, **206**, 207, **207**
 Discovery 186, 193
 Importance, strategic 186, 192, 200-201
 Industry 186, 197, 201; Electricity needs 186, 189, 191, 193, 196-197; Plants **196-197**
 Ores 192, 195, 201 *see also* Bauxite, *above*
 Packaging 188, 189, 204, 208, **208**, **209**
 Properties 188-189, 203, 208, 209
 Recycling 189, 193, 203-204, 208, **208**, 209, 211; Collectors 204, **208**, **209**; Cost 189, 193, 204
 Reflectivity 186, 188, 189
 Research 195, 198, 201, **208**, 209
 Smelting: Diagram **192-193**; Discovery of process 196, 198; Electricity needs 186, 189, 191, 193, 196-197, 198; Pollution 198
 Transmission cables, electric

- 186, 190-191
Versatility 186, 188-189, 196
Weight advantages 188, 189, 191, 203, 204
- Aluminum Company of America (Alcoa) 151; Founder 196, 198; Recycling 208; Research 198; Vice-president 197
- Alunite: Aluminum ore, possible 195, 201
- Amer, Hayel 339
- American Agricultural Movement: Georgia support 234
- American Bureau of Shipping: *Amoco Cadiz* inspection 126
- American Friends Service Committee: Migrant workers, report on 623
- American Indian National Bank, Washington, D. C. 627
- An American Retraces "Travels With a Donkey."* By Carolyn Bennett Patterson. Oct., 535-561
- American Sign Language (Ameslan): Chimpanzee communication 440-441, 449, 461; Gorilla communication 438, 440, 441, 456, 461, "molding technique" 441, 449
- America's Cup* race (1977): Aluminum craft 186, 203
- Ames, Iowa: Resource-recovery plant 209, 211
- Ameslan see American Sign Language
- Amoco Cadiz* (VLCC): Oil spill 1, 107, 108, 120, *Superspill: Black Day for Brittany*. By Martin Rogers. July, 124-135
- Amoco Production Company 637; Natural-gas wells 638, 648, 650
- Amorites 741
- Amos, James L., photographer: *Aluminum, the Magic Metal*. Aug., 186-211
- Amphitheater, Dresden, East Germany: Painting of 711
- Amsberry, Helen 511
- Amsterdam, Netherlands: Auction, East India cargo 574; Cannon maker 574; Rijksmuseum collection 575, 576
- Amundsen, Roald 268, 283, 302
- Anadarko Basin, Okla.: Natural gas: Deep-basin wells 641, 650, production 641, 648
- Anasazi (Indians): Grand Canyon 38, 40, 41, granaries 39, 40
- Anatosaurus* (dinosaur) 157, cover
- Anchor, stone: Sumerian 818
- Ancient Ebla Opens a New Chapter of History*. By Howard La Fay. Dec., 730-759
- Andersen, Roy, artist: *A New Look at Dinosaurs*. Aug., 152-185
- Anderson, Maxie L.: *Double Eagle II Has Landed! Crossing the Atlantic by Balloon*. Dec., 858-882
- Anderson, Patty 872
- Anderson, Ian and Betsy 254
- André, Father 551, 558
- Andrée, Salomon 268
- Andress, Max 385
- Andrew W. Mellon Foundation 683
- Andronicos, Manolis 65; *Regal Treasures From a Macedonian Tomb*. July, 55-77
- Andrus, Cecil 27
- Anesthetizing of animals: Burros, Grand Canyon 28, 30, deaths from drug 28, 31, 31; Pig research 407
- Angermeyer, Fidli 376
- Anglesey, Wales: Supertanker port 123
- Animal behavior: Mountain goats 285, 295-296; Pigs 400, 403, 405, 408, 409, 411, 414; see also Gorillas
- Animal introduction: Grand Canyon 22, 23, 27, 30; New World: Churro sheep 434, 436, pigs 400
- Animal studies: Research animals: Golden hamsters 340, pigs 400, 407, 411-413; see also Gorillas; Mountain goats
- Ankylosaurus* (dinosaur) 156-157
- Annacotty, Ireland: Waterfalls 674
- Anorthosite: Aluminum ore, possible 195, 201
- Antigonos Gonatas, King (Macedon) 58, 63, 64, 76
- Anti-Lebanon Range see Sharqi, Al Jabal ash
- Antoine, Gérard and Noëlle 539
- Apatosaurus* (dinosaur) see *Brontosaurus*
- Appalachia (region), U. S.: Natural-gas reserves 641, 647, 649, 650
- Apple growing: Niagara-on-the-Lake, Ontario 777; *Washington's Yakima Valley*. By Mark Miller. Nov., 609-631
- Frost emergencies 612, 615
- Harvesting 609, 610, 610
- Labor force 609, 610, 611, 612, 618-619, 631
- Orchards 609, 610-612, 611; Acreage 610
- Packing and shipping 611
- Production figures 610, 611
- Storage, controlled-atmosphere 611
- Varieties and shapes 615, 617
- Aqra, Jabal, Syria 341
- Ar Raqqa, Syria: Experimental farms near 354
- Arab-Israeli conflict 326, 327, 341, 343, 357, 360; Effects of 348, 357, 360; Palestinian refugees 341, 342-343, 343; Suez Canal closing (1967) 107
- Arab nations see Saudi Arabia; Syria
- Arafat, Plain of: Pilgrimages 585, 588, pilgrims 578-580, 588, 594-595
- Aragón, John 432, 434
- Aramaic language, Western: Malula, Syria 344, 349
- Archaeopteryx* (extinct bird) 164, 167, 178; Feathers 164, 168, 184, fossil impressions 169; Skeleton 164, 169, diagram 168
- Archeological Society of Athens, Greece: Macedon dig, 63
- Archeology: Bahrain 816, finds 816, 817, 817, 818; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759; Grand Canyon 28, 40, finds 18-20, 39, 40, 41; see also Macedonian tomb
- Archeology, underwater see Witte Leeuw
- Architecture see Columbus, Ind.; National Gallery of Art
- ARCO Fairbanks* (supertanker): Valdez Narrows, Alaska 105, 118
- Arctic explorers 267, 268, 271, 272, 283, 297, 297, 302; *Solo to the Pole*. By Naomi Uemura. Sept., 298-325
- Clothing 299, 300, 301, 304, 305, 312, 312, 318, 324, 325, cover
- Communication 304, 316, 322, 324; Radio 304, 310-311, 316
- Distance traveled 302
- Financing 301, 314, 323
- Floes and leads 302, 309, 312-313, 314-315, 316, 319
- Food supplies 300, 309, 310
- Map 302-303
- North Pole 320-325
- Polar bear: Attack 300, 304, 305; Jawbone 305
- Sextant 312, 321, 322, 323
- Sled 300, 301, 305, 306-308, 309, 313, 316, 316-317, 320
- Supply plane 304, 309, 310, 314, 317, 319
- Tent 300, 304, 304, 308, 310-311, 313, 323
- Traveling time 302, 307, 320, 324
- Arctic Regions: Hydrate layers 647, 650, 651; see also Alaska; Arctic explorers; Svalbard, Norway
- Ardnacrusha, Ireland: Hydroelectric plant 661, 669, 672
- Argo Merchant* (tanker): Oil spill 1, 108, 120-121
- Arigna Collieries mine, Ireland 660
- Arizona see Grand Canyon; Grand Canyon National Park
- Arkansas: Bauxite 196, 200; Natural-gas reserves 641
- Arkoma Basin, Ark.-Okla.: Natural-gas reserves 641
- Arktika* (nuclear icebreaker) 302
- Armenians: Kassab, Syria 341
- Armor: Ancient Greek 60-61, 64-65, 71, 72, 73; Gilded steel: Dresden collection 702-703
- Arp, Jean: Sculpture by 699
- Art: *Art Treasures of Dresden*. By John L. Eliot. Nov., 702-717; Interior decorating 626; *The National Gallery's New Masterwork on the Mall*. By J. Carter Brown. Nov., 680-701; Pop art: Automobile decoration 626; see also Art, primitive; Artwork, ancient; Chinese art
- Art, primitive: Figures, willow-

- shoot 20, 41; Pottery 19; Rock paintings 18-19
- Art restoration: Dresden treasures 705, 709, 717
- Artwork, ancient 405, 735, 741, 752; Carvings 735, 740; Ceramics 738; Sculpture 735, 738, 740, 744, 754; *see also* Macedonian tomb
- Asbestos suit, aluminized 186, 189
- Ashurnasirpal II, King (Assyria): Wars, cruelty of 741
- Asia: Smallpox 800, 804; *see also* Japan; Middle East and Near East
- Asia Minor: Invasion (336 B.C.) 57, 62
- al-Assad, Hafez 327, 333
- Assad, Lake, Syria 353-354
- Assal, Lake, Djibouti 524
- Assamo, Fort, Djibouti 522
- Assyria (ancient empire): Warfare 326, 741
- Atchafalaya River, La.: Pipelines spanning 640
- Athlone, Ireland 665, 667; Pub-owner 663
- Atlanta, Ga.: Center for Disease Control 223, 798, 800; *Georgia Unlimited*. By Alice J. Hall. Aug., 202-245; Primate research center 451
- Atlantic Ocean: Balloon flights, attempted 864, 870-871; *see also Double Eagle II, outlined*
- al-Atrash, Taha 354, 360
- Auctions: Cattle 507, 512-513; East India cargo 574; Federal Government 512-513
- Augusta, Ga. 229; Masters Golf Tournament 215, 226-227, 229, 242
- Augustus II, Elector (Saxony) and King (Poland) 704, 706, 709, 710, 711, 712
- Augustus III, Elector (Saxony) and King (Poland) 704, 713, 714; Sculpture of 714
- Aurand, René and Gaby 546
- Aureng-Zeb (Indian ruler): Model of court 706, 712-713
- Aurness, Craig, photographer: *New Mexico's Mountains of Mystery*. Sept., 416-436
- Aurora, Ontario: Horse-show contestant 772
- Australia: Bauxite 194, 198, 200
- Automobiles: Aluminum use 189, 203, 205
- Avalanches: Mountain-goat casualties 293; Prevention: Yellowstone National Park 856
- Aymara Indians: Reed-ship construction 808, 810-811, 815
- B
- Baath Party: Syria 333, 343
- Bab el Mandeb (strait), Red Sea-Gulf of Aden 519
- Babylon (ancient city) 757, 759; Ruins 757, 759; Warfare 326
- Baby's rattle, aluminum and gold 199
- Bach, Johann Sebastian: Work of 702, 717
- Bacteria, light-emitting 719, 720, 722
- Baghdad, Iraq 759; Sumerian records 813
- Bahrain 816; Archeological finds 816, 818; Burial mounds 816-817; Ruins 817; *see also* Dilmun
- Bailey, Bob and Marian 411
- Bakalakis, George 63
- Baker, Norman 815, 820
- Bakker, Robert 162, 174, 178, 184
- Bal, Elma 419
- Ball, Arthur 225
- Ball-bearing company: Gainesville, Ga. 225-226
- Balla (ancient town), Macedonia 63
- Ballinasloe, Ireland: Ballinasloe steeds 663; Great October Fair 662-665, 676
- Balloons: Transatlantic flights, attempted 864, 870-871; *Double Eagle II Has Landed! Crossing the Atlantic by Balloon*. By Ben L. Abruzzo with Maxie L. Anderson and Larry Newman. Dec., 858-882
- Bangladesh: Smallpox 804
- Baniyas, Syria: Oil refinery 348
- Banu, Rahima 804
- Bardari, Pasquale 127, 128
- Barents, Willem 267, 271
- Barents Sea, Arctic Ocean 274, 276, 281
- Barentsburg, Spitsbergen, Norway: Name origin 271; Natural refrigeration 270; Soviet community 271, 271, 277, 278
- Barnes, Margaret Anne 224
- Barron, Harris: Sculpture by 393
- Baruch, Simon and Renee 245
- Baseball: Toronto, Ontario 776
- Bass Islands, Ohio: *Yesterday Ling-ers on Lake Erie's Bass Islands*. By Terry and Lyntha Eiler. July, 86-101
- Airline 90; Tin Goose (airplane) 90, 91, 92, crash 90, 92
- Ferry service 86, 98
- Fishing: Commercial 88, 92, 95, 99; Sport: Bait seller 86, 88, 92, ice fishing 100, 100
- Location 88; Map 89
- Major islands 86, 98-99
- Name origin 98
- Ownership 86
- Sailing 97; Race 96; Yachtsman 87
- Summer visitors 86, 89, 97
- Wine industry 90, 92, 94-95; Vineyards 94-95
- Le Bateau Ivre (inn), Le Puy, France 539
- Baton Rouge, La.: Natural gas: Geopressure wells 638, blowout 638, 638
- Battelle Pacific Northwest Laboratories, Richland, Wash.: Pig research 407
- Battle, naval: St. Helena, South Atlantic Ocean 562, 563, 564-565, 566, 570, 576
- Battlebridge, Ireland 652, 656
- Baumann, J. Bruce, photographer: *A Most Uncommon Town: Columbus, Indiana*. Sept., 383-397
- Bauxite 192, 194, 196, 198, 200-201, 656; Name origin 192; Refining: Diagram 192-193; Reserves, world 200; Strip mine 194-195, 198
- Baybars, Sultan (Egypt): Crusaders, defeat of 345
- Bazaars: Aleppo, Syria 340; Damascus, Syria 333, 334, 335
- Beach formation: Colorado River 22, 23
- Beagle III* (research vessel) 373, 376
- Bears: Black 832; *see also* Grizzly bears; Polar bears
- Beaufort Sea, Arctic Ocean: Methane hydrates 650
- Beckwith, Wendell 780, 781; "snail home" 781
- Bedouin 353, 354-355
- Beebe, William 374; Quoted 374
- Beef production: Economics of 507-508; Sand Hills, Nebr. 498, 517
- Beehive houses: Syria 336-337
- Beer making: Hops 618, 620-621
- Bel Air (hotel), Langogne, France 542, 544
- Belford, Eric 781
- Bellamya* (ULCC) 123-124; Bridge 106, 123; Crew 106, 107, 123; Deadweight tons 107, 123
- Bennett, Floyd 268, 283, 302
- Bentley, Dave and Pat 789
- Beresford, John: Quoted 405
- Bergman, Bernard P. 305
- Berthier, Monique 561
- Besson, Régis 552
- Bethlehem, Ga. 233
- Bibby, Geoffrey 816, 817, 818
- Biber, Mehmet, photographer: *Pilgrimage to Mecca*. Nov., 581-607
- Biblical studies: Ebla tablets, impact of 733, 736-737, 740, 748
- Biglane, Kenneth 118, 120, 134
- Bioluminescence *see* *Photoblepharon*
- Birchwood Station, South Island, New Zealand 249, 251, 255
- Bird, Roland 162
- Birds: Bird hospitals: France 134; Boobies, red-footed 379; Canada geese 490-491; Dinosaurs possible ancestors of 152, 164, 166, 167, 168, 178, 184; Endothermy 178, 184; Evolution: Diagram 166; Extinct 17; Georgia 229, 229, 235; Oil-spill victims 124, 134, cormorant 135; Penguins 372, 379; Svalbard, Norway 282, 282-283; Swans, trumpeter 840-841
- Birmingham, England: Laboratory-contracted smallpox 797, 800
- Bishop, Dick 570

- Black Day for Brittany** (oil spill). By Martin Rogers. July, 124-135
- Black Forest Station**, South Island, New Zealand **250**, 251, 259; Fire **251**, 264; Woolshed **251**
- Black Stone**: Kaaba, Mecca **585**, **592**
- Blackamoor**: Statue of **708**, 710
- Blackstein**, Fred 790-791
- Blanch**, José Maria 416
- Blankets**, aluminized **186**, **188-189**
- Bleekrode**, R. K. 124
- Blizzard** of 1879: Sand Hills, Nebr.: Cattle episode **501**, 510-511
- Block**, Ira **297**; photographer: *Solo to the Pole*. Sept., 298-325
- Blunt**, Frances 249
- Boar**, European wild **403**, **404**, 411
- Boats**: Aluminum **186**, **202-203**, 203; Dories **44**, 45, **46-47**, **49**; Fishing boats **228**, **240-241**, 489, oil-damaged **132-133**; *Grand Canyon: Are We Loving It to Death?* By W. E. Garrett. July 16-51; Inflatable boats **5-6**, **40**, 45, outboard motor using **40**; Jet-boat inventor **259**; see also Shannon, River
- Bogert**, Charles 176
- Böhm**, Hans Peter **820**, **821**
- Bonneville Power Administration**, Oreg.: Transmission cables, aluminum **190-191**
- Boru**, Brian 672, 676, 679
- Boswell**, Victor R., Jr., photographer: *Treasures of Dresden*. Nov., 702-717
- Botanical garden**: Vancouver, British Columbia **488-489**
- Böttger**, Johann Friedrich 711; Porcelain designs by **707**, 711
- Boulder City**, Nev.: Aluminum research **195**, 201
- Bournemouth**, England: Aerial view **868-869**
- Boyer**, David S.: *Ontario: Canada's Keystone*. Dec., 760-795
- Boyles**, Art 100
- Brachiosaurus** (dinosaur) **155-156**, **170**, 171; Size **170**, 171, comparison diagrams **155-156**, **176**
- Bradford**, Richard 420
- Brands**, cattle: Sand Hills, Nebr. **498**, **503**
- Brendan the Navigator** 656
- Bretz**, Leslie 94
- Brimberg**, Sisse, photographer: *Washington's Yakima Valley*. Nov., 609-631
- Brine fly** 848
- British Columbia**: Natural resources 487, forest products **468**, **472-473**, 478, 487; see also Vancouver, outlined
- British Somaliland**, former 521
- Britt**, Kent **401**; *The Joy of Pigs*. Sept., 398-415
- Brittany** (region), France: Oil spill (1978) **1**, 107, 108, 120, *Super-spill: Black Day for Brittany*. By Martin Rogers. July, 124-135
- Brock**, Norris 821
- Broggio**, André 536; Family **539**, 540
- Brontosaurus** (dinosaur) **155-157**, **180-181**; Size **180**
- Bronze**: Ancient Macedonian **57**, **60-61**, **64-65**, 73, 75; Sculpture **682**, 694
- Bronze Age**, early see Semitic cultures
- Brown**, J. Carter **688**; *The National Gallery's New Masterwork on the Mall*. Nov., 680-701
- Bruce**, Ailsa Mellon 683
- Bruce complex** (nuclear plant), Ontario, Canada 790
- Bryan**, George 650-651
- Buckland**, William 167
- Buffalo**: Yellowstone National Park **829**, **836-837**, 839, **847**, 856, winterkill 839, 856
- Bullington**, John 228-231
- Burial mounds**: Bahrain **816-817**; see also Macedonian tomb
- Burke**, Stanley: Float home **474**
- Burmeister**, Slim 436
- Burnaby**, British Columbia: Mayor **482**
- Burns**, Peter, and son 672
- Burrard Inlet**, British Columbia **466-467**, 467, **470-471**, 472, 490
- Burris**, Dale 94
- Burros**, Grand Canyon **24**, 27, **31**; Airlifted from park **28**, **31**; Auctioning of **28**; Damage caused by **27**, **30**, **30**; Destruction of, halted **27**, **30**, cost of alternatives **27-28**, **30**, 31
- Busbee**, George 214
- Bush**, Geri **496**, **497**
- Bushpig** **404**
- Byrd**, Richard E. 268, 283, 302

C

- Cacciottolo**, Antonio 103, 104, **104**, 117
- Caird**, Donald **668**
- Calder**, Alexander: Mobiles by **188**, **680-681**, 683, **686-687**, 694, 698, 701
- Calendars**: Ebla **750**; Islam **585**, 587, 588
- Camels** **526**
- Camisard War** 553, 554, 555, 560
- Camptosaurus** (dinosaur) **156**
- Canaanite cultures**: Eblaite influence **740**, 749, 754
- Canada**: Immigration policies 482; Indian affairs **782**, 784, 787; see also Ontario, outlined; Vancouver, British Columbia, outlined
- Canadian National (CN) Tower**, Toronto, Ontario **762**; View from **762-763**
- Canby**, Thomas Y.: *Aluminum, the Magic Metal*. Aug., 186-211
- Canby**, Vert and Yellott 204
- Cannons** **567**, 569, 570, 574, 576
- Cans**, aluminum **188**, 189, **208**, **209**; Recycling **189**, 193, 204, 208
- Canyon Village**, Yellowstone National Park **832**, 848, 849
- Canyons** see Grand Canyon, Ariz.
- Cape Coral**, Fla.: Aluminum-can collector **209**
- Carchemish** (ancient city): Seal **754**
- Cárdenas**, Don García López de **32**, 44
- Carlsen**, Anker 272-273
- Caroline Islands** see Palau Islands
- Carranadoc Lough**, Ireland **663**
- Carrasco**, German **820**
- Carrick** on Shannon, Ireland **656**, 663; Aerial view **654-655**
- Carter**, Billy **216**, **216**; Gas station **216**
- Carter**, Hugh **216**; Shop **217**
- Carter**, Jimmy **213**, 214, **216-217**, 220, 245
- Carter**, Lillian 245
- Cartography** see Mapmaking
- Cascade Mountains**, U. S.: Yakima Valley's water supply and **609-610**
- Caskets**, gold: Ancient Macedonian tomb **55**, 57, **67-69**, 75, 76
- Castings**, aluminum **193**, **196-197**
- Castles**: France: Ruins **545**, **546**, 547; Ireland **677**, ruins **672**; Krak des Chevaliers, Syria **344-345**
- Catawba grapes** 92, 94; Vineyard **94-95**
- Cattle** and cattle raising: France: Market **542-543**; *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517; New Mexico **428**, 434, 436; River Shannon region, Ireland **656**, 658, **658**, 661, 664, 665; South Island, New Zealand **248**, 251, 254, 263; Syria **354**
- Cavadas**, John 487
- Cave of Sorrows**, St. Germain de Calberte, France **560**
- Center for Advanced Study in the Visual Arts**, National Gallery of Art, Wash., D. C. **688**; Under construction **688**
- Center for Disease Control**, Atlanta, Ga. **223**; Smallpox eradication **798**, 800
- Center for Lake Erie Area Research (CLEAR)** 99
- Ceraland** (recreation area), Columbus, Ind. **392**
- Ceramists** see Potters
- Cévennes** (region), France: *Travels With a Donkey—100 Years Later*. By Carolyn Bennett Patterson. Oct., 535-561
- Cévennes Mountains**, France **556-557**; Mont Lozère **536-537**
- Chadwick**, Douglas H.: *Mountain Goats: Daring Guardians of the Heights*. Aug., 284-296
- Chadwick**, Elizabeth Fuller 289
- Chadwick**, Karen Reeves 284
- Chaeronea** (ancient city), Epirus **75**
- Chalk River Nuclear Laboratories**, Ontario 790-791
- Chambliss**, Sue **216**

- Champion, Charles A. 118
Chanute Air Force Base, Ill.: Fire fighter 189
Chapel of the Sacrament, Katoische Hofkirche, Dresden, East Germany: Art restoration 717
Charles Darwin Research Station, Santa Cruz (island), Galapagos Islands 371, 373
Charleston, S. C.: Harbor 633
Chasseradès (village), France 548; Countryside near 556-557
Château Beaufort ruins, Goudet, France: Sketch of 545
Chattooga River, Ga. 227
Chayla, Abbé du 554
Cheechoo, Vern 787
Chehem, Hassan, and father 533
Cherry County, Nebr.: *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517
Chess: Chessmen, models for 842, 848; Norwegian-Soviet competitions 278, 279
Chester Whites (swine breed) 412-413
Chesterston, G. K.: Quoted 410
Chevron Brussels (VLCC) 102-103
Chevron U.S.A.: Natural-gas well blowout 638, 638
Cheylard l'Évêque, France 539, 546
Chili peppers 422, 426, 436
Chimayo, N. Mex. 416, 421, 422, 423; Barrios 419; Shrine 418, 425, 426, 432, 432
Chimpanzees: Communication 438, 440-441, 449, 451, 461; Goodall study 437; Hayes study 441
Chinatown (district), Vancouver, British Columbia 476, 478
Chinese (people): Potters, 16th- and 17th-century 570, 574, 576; Vancouver, British Columbia 476, 478, 480, 482, 485, 485
Chinese art: Ming Dynasty porcelain 563, 568, 570, 571-573, 574, 575, 576
Chingtechen, China: Porcelain 570, 574
Chisholm, Illian 434
Chiyoda, Japan: *Day of the Rice God* (festival). By J. Edward Kim. July, 78-85
Christmas: New Mexico 422, 423; Syria 347; Yellowstone National Park 849
Churches: Columbus, Ind. 385, 390, 391; Dresden, East Germany 704-705, 707, 709, 714, 717
Churro sheep: Brought to New World 434-435
Ciarrán, Saint 665, 667
Circle Oaks Farm, Elora, Tenn.: Pigs 402-403
City-kingdoms 337, 340, 341, 350, 353; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759; *Tribes to Empires: The Growth of Civilization*. Sept. supplement
Civilizations, early 326, 327, 337, 341, 358; *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827; *Tribes to Empires: The Growth of Civilization*. Sept. supplement; see also Ebla; Sumerians
Clarendon Lock, River Shannon, Ireland 661
Clark, Eugenie 722; *Flashlight Fish of the Red Sea*. Nov., 719-728
Claudius, Abbot 548
Clay County Fair, Spencer, Iowa 412-413
Clay tablets see Cuneiform tablets
Clayton, Ga. 242; Countryside store 230-231; Potato harvest 238
Cleanup, man-powered: Oil spill 125, 130, 133
Cleary, John, and mother 679
Cleland, Max 221
Cleopatra (wife of Philip II of Macedonia) 67, 76; Portrait, possible 74; Tomb, possible 67, 66-67, 76
Clocks: Dresden artworks 716, 717; Steam-powered 475, 477
Clonmacnoise (monastery) ruins, Ireland 657, 667, 668, 669
Coal: Gas made from 634; Ireland 657, 660, 661; Ontario, Canada 782; Svalbard, Norway 267, 268, 269, 272, 274, 283, processing plant 272
Coal seams: Natural gas 632, 645, map locating 645-647, reserve estimates 632, 645, 649
Cobalt-oxide pigments: Pottery 570, 574
Cobb, Jodi, photographer: *Land of Long Sunsets: Nebraska's Sand Hills*. Oct., 493-517
Coburn, Hod 849
Coca-Cola bottling plant: Djibouti 533
Cody, Nebr. 506-507
Coelophysis (dinosaur) 155
Cohn, Ronald H., photographer: *Conversations With a Gorilla*. Oct., 438-465
Coins, ancient Greek 66-67, 76
Colbert, Edwin 176
Collinsworth, Even 436
Collum, Herbert 717
Colorado: Fossil sites 167, 171, 177; Gas field, largest 637, 648
Colorado River, U. S.:
The Grand Canyon. July supplement
Grand Canyon. By W. E. Garrett. July, 2-15
Grand Canyon: Are We Loving It to Death? By W. E. Garrett. July, 16-51
Beaches 22, 46-47; Deteriorating 22, 23
Boat trips 17, 22, 45, 51; Inflatable rafts 5-6, 40, 45; Mismanagement, charges of 17, lawsuit 17, 26, recommended solutions 20, 26-27, 40; Motorboat controversy 22-23, 40; Wooden boats (dories) 44, 45, 46-47, 49, 51
Damming: Changes with supplement, fish life 22, 23, flow reduced 20, 22, 23; Construction halted 20, 25, 44
Exploration: First 32; Powell expedition 32, 44
Geological history supplement
Rapids 4-6, 16, 20, 22, 23, 45, 49, 51
River runners, annual number of 17, 46
Satellite monitoring 23
Silt transport 4-6, 16; Pre-dam statistics 23, supplement; Reduction in, effects of 22, 23
Columbia, Cape, Canada: North Pole expedition 302, 304, 312, 314
Columbia River system, Canada-U. S.: Hydroelectric dams 191, 197
Columbus, Christopher 400
Columbus, Ind.: *A Most Uncommon Town: Columbus, Indiana*. By J. Bruce Baumann. Sept., 383-397
Aerial view 384-385
Architecture 382, 383, 387, 396-397; Churches 385, 390, 391; Schools 386, 388-389
Mayor 385
Colvin, Sidney 561
Comanche Livestock piggery, Strasburg, Colo. 410
The Commons, Columbus, Ind. 382, 383
Communication, animal: *Conversations With a Gorilla*. By Francine Patterson. Oct., 438-465; *Photoblepharon* 720, 728
Comprehensive Employment and Training Act (CETA) 222
Compsognathus (dinosaur) 156, 164, 178; Posture 174
Computer applications: Glen Canyon Dam, Ariz.: Water-flow control 20, 23; Primate research 451, 454, 462; Supertankers: Safety devices 123-124, simulators 118-119, 121
Conlon, Mai 661, 663
Connecticut: Fossil footprints 162
Conservation practices: Ranchers 508; River runners, professional 44, 46; see also Recycling
Constable, Tom 482
Construction industry: Aluminum 188, 206, 207, 207
Continental drift: Dinosaur-extinction theory 182, 184
Continental shelf: Svalbard, Norway 276, map 268
Conversations With a Gorilla. By Francine Patterson. Oct., 438-465
Cook, Frederick A. 297, 302
Cook, Harold 638-639
Cook, James 249
Copper: Aluminum alloy 193; Oman, ancient 812, 818, mine,

- remains of **819, 825**; Recycling **204**
 Coquerel, Rachel and Roger **881**
 Coral World (aquarium), Elat, Israel **722, 726, 728**; Curator **720, 722, 723**
 Corals:
Dazzling Corals of Palau. By Douglas Faulkner. July, 136-150
 Deepwater coral **150**
 Feeding habits **138, 139, 148**;
 Nightfeeders **149**
 Island formation **140-141, 143**
 Polyps: Contracted **138, 144-145, 149**; Emergent **139, 142-143, 145, 148, 149**
 Skeleton formation **143**
 Soft corals **138-139, 144-145, 148-149**
 Species, number found **137**
 Stony corals **136-139, 142-143, 150**
 Threats to **136-137, 147, 150**;
 Enemies **145**
 Galapagos Islands **370, 372**; Polyps **377, 380**
 Red Sea reefs **720, 720, 722-723**
 Cordele, Ga. **228, 229**
 Cordell, Wiley **617**
 Cordova, N. Mex. **422, 432**
 Corn: Georgia **216, 229, 230, 235**;
 drought- and pest-damaged **239**;
 Pig consumption of **411, 413**;
 Primitive **18, 41**
 Cornwall, England: Oil spill (1967) **108, 121**
 Coronado, Juan Vázquez de **430**
 Corselet (body armor), ancient Macedonian **71, 72, 73**
 Cortés, Hernán **797**
 Cortial, Louis **540**
Corythosaurus (dinosaur) **157, 179**
 Costa, Paulo **818, 824-825**
 Costaros, France: Cattle market **542-543**
 Costelloe, John **669**
 Cotton: Syria **339, 341, 346, 352**
 Coulson, Cotton, photographer: *Travels With a Donkey—100 Years Later*. Oct., 535-561
 Court trial: Ancient Nippur **757**
 Cow manure: Methane produced from **651**
 Cowboys: New Mexico **428, 429, 436**; Sand Hills, Nebr. **493, 499, 501, 505, 510, 516**, Texas drovers **511, 512**, women ranch hands **510, 511**
 Cowles, Raymond **176**
 Cowpox vaccine **798, 801**
 Coyotes: Yellowstone National Park **839, 846, 856**, bones **846**
 Craighead, John **22, 23**
 Cranach, Lucas, the Elder **713**
 Cree Indians: Ontario **782, 784, 786, 787, 787, 788**
 Crosses: Chimayo, N. Mex. **423**
Crossing the Atlantic by Balloon (Double Eagle II) By Ben L. Abruzzo with Maxie L. Anderson and Larry Newman. Dec., 858-882
 Crotty, John **678**
 Crucifix, carved wooden: Potrero, N. Mex. **425-426, 432**
 Crucifixion, reenactment of: New Mexico **420, 430, 432**
 Crusaders: Baybars' defeat of (1271) **345**; Jerusalem: Rout of Muslims **333**; Orders **343, 344**;
 Syria, conquest and rule of **326, 343-344**, fortress **344-345**
 Cryolite: Aluminum smelting **193, 196, 198**
 Cuban aid: Ethiopia **520**
 Culpepper (island), Galapagos Islands **379, 380**
 Cummins Engine Company: Columbus, Ind. **386, 387, 388, 392, 397**, founder **386**
 Cundiyo, N. Mex. **422-423**
 Cuneiform tablets **340, 341, 353, 811, 813**; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759
 Curtis, Stanley **414**
 Cyprus **729**
- ## D
- Dahlman, Jim **510**
 Dahood, Mitchell **737, 740, 749**
 Dale, O. C. **49, 51**
 Dale, Regan **45, 51**
 Damascus, Syria **326, 328, 329, 333-337, 357, 360**; Aerial view **330-331**; Bazaars **333, 334, 335**;
 Muslims **333**; Population **332, 333**; Urban renewal **330-331, 333**
 Damhus, Asbjörn **821, 821**
 Dams: Colorado River **25, 44**, construction halted **20, 25, 44**, detriments of **20, 22, 23**; Euphrates **327, 338, 339, 353-354**; Hydro-power **151**
 Dancers and dancing: Belly dancing **484**; Cévenol folk dance **541**;
 Flower-hat dancers **78-79**
 Dar Ta Izzah, Syria: Farming near **348-349**
 Darwin, Charles **371, 380**
 Daubenthaler, Therese **209**
 David (name): Ebla tablets **733, 736**
 Davis, Kathy **791**
 Davis, William **765, 782, 791, 794**
 Davy, Sir Humphry **193, 196**
Day of the Rice God (festival in Japan). By H. Edward Kim. July, 78-85
Dazzling Corals of Palau. By Douglas Faulkner. July, 136-150
 Deep basins: Natural-gas source **632**; Map locating **645-647**;
 Wells **641, 648, 650, 651**, drilling problems **641, 645, 651**
 Deer Creek, Ariz. **43**
 Deighton, John ("Gassy Jack") **475**; Statue of **476**
Deinocheirus (dinosaur): Discovery **170-171**; Size **171**
Deinonychus (dinosaur) **156, 160-161, 162, 178**; Claws **158, 160, 161-162, 164**, diagram **161**; Dis-
- covery site **152, 158, 158-159**;
 Posture **174**; Size **160**; Skeleton **158, 161, 164**
 Deities: Ancient Middle East **740, 741, 745, 754, 755, 757**, Jehova (Yaweh) **737, 740**; Greek **54, 70**
 Delap, Bill **648**
 Delauze, Henri **566**
 Delaware Basin, Tex.: Natural gas **641**
 Delesalle, Philippe **121**
 Delft pottery **570, 574**
 Demarchi, Ray **296**
 Demeter (Greek goddess) **70**
 Derg, Lough, Ireland **666, 667**;
 Farmhouses near **670-671**
 Desertification, causes of: Overgrazing by sheep **44**; River course, shifting of **755, 757**
 Deul, Maurice **649**
 Devonian shales: Natural-gas source **632, 647, 649**
 Dhahan, Budhsingh **482-483**
 Diab, Ali **326**
 Diab, Muhammad, and wife **354-355**
Diadema (sea urchin) **727, 728**
 Diadems, gold and silver: Macedonian royalty **57, 61, 72, 76**
 Dias, Martin E. **441, 449**
 Dickey, James **224, 227**
 Dictionary, bilingual (Eblaite-Sumerian) **734, 749**
 Dicyodonts (reptiles): Posture **174**
 Dilmun (ancient land) **811, 812**;
 Trade center **816, 817, 818, 825**
 Dingle Burn (river), South Island, New Zealand **249**
 Dinglinger, Johann M.: Goldwork by **706, 708, 710, 712-713**
 Dinosaur National Monument, Colo.-Utah: Finds **172**; Gallery **172-173**
 Dinosaur State Park, Conn.: Fossil footprints **162**
 Dinosaurs: *A New Look at Dinosaurs*. By John H. Ostrom. Aug., 152-185
 Birds possible descendants of **152, 164, 166, 167, 168, 178, 184**
 Bones **163, 170, 174-175, 176, 179, 181, 183, 185**; Tissue **176, 182, 182**; see also Fossils; Skeletons, below
 Ectothermy theory **152, 171, 172, 173, 176**
 Endothermy theory **152, 160, 164, 168, 171, 172-173, 174, 176, 178, 182, 184**
 Evolution **164**; Diagram **166**
 Extinction **152, 178**; Theories **178, 182, 184, 185**
 Food consumption **171, 172, 174, 178**
 Fossils: Bones **152, 158, 160, 162, 166, 167, 170-171, 172-173, 177**; see also Skeletons, below; Earliest find **167**; Footprints **162, 170**; Formation **172**; Sites **152, 158, 158-159, 162, 167, 177**

Homiothermy theory 176, 178, 181
 Hunting methods 161-162, 164
 Name meaning 167
 Posture 173-174
 Predator-prey ratio 174
 Range 170
 Size 160, 162, 164, 170, 171, 176, 180; Comparative diagrams 155-157, 176; Largest known 167, 171, 172, 176
 Skeletons 161, 161-162, 164, 168, 168, 174; Fossils 152-154, 164, 165, 169, 172
Diplodocus (dinosaur) 155-157
 Diseases: Chicken pox 797; Epidemics, former at hajj 603; Malaria 222; Measles 798; *see also* Smallpox, *outlined*
 Distilling, mint-oil 617
 Djibouti, Republic of:
 Djibouti, Tiny New Nation on Africa's Horn. By Marion Kaplan. Oct., 518-533
 Afars (people) 519, 520, 523, 533
 Capital *see* Djibouti (town)
 Economy 519, 520, 525, 533
 Education 533
 Facts and figures 520
 Flag 519, 520
 The French 519, 523, 528-529
 History 519, 520
 Independence 519; Independence Day 518-519
 Location, strategic 519, 520
 Map 520
 Military forces 519, 522, 523, 528-529
 Issas (people) 519, 520, 523, 525
 President *see* Hassan Gouled Aptidon
 Refugee camp 528-529
 Unemployment 519, 533
 U. S. aid 528
 Water holes 523, 526, 527
 Smallpox-eradication campaign 797
 Tigris, burning of 826, 826-827
 Djibouti (town), Djibouti 519, 520, 521, 524-525
 Dobbs, Joe 773, 776
 Dogs: 208, 255; "catch-dogs" 403; Labrador retriever 257; Sheep dogs 246-247, 251, 254, 260-261, border collies 254, 257; Truffle hunters 408, 410; *see also* Sled dogs
 Dogsled trip: *Solo to the North Pole*. By Naomi Uemura. Sept., 298-325
 Dolphins: Bottlenose 363; Common 377
 Donkey trek: *Travels With a Donkey—100 Years Later*. By Carolyn Bennett Patterson. Oct., 535-561
 Dories: White-water trips 44, 45, 46-47, 49
 Doubilet, David, photographer: *Flashlight Fish of the Red Sea*. Nov., 719-728; *Undersea Won-*

ders of the Galapagos. Sept., 363-381
Double Eagle (helium balloon) 859, 860, 865, 870, 871
Double Eagle II (helium balloon): *Double Eagle II Has Landed! Crossing the Atlantic by Balloon*. By Ben L. Abruzzo with Maxie L. Anderson and Larry Newman. Dec., 858-882
 Altitude of flight 861, 864, 865, 866, 868, 874; Diagram 870-871
 Ballast 859, 861, 864, 865-866, 870-871, 877
 Communications 861, 864-865, 869, 872, 874, 880, 882
 Construction of 860, 864-865
 Duct 860; Diagram 866
 Duration of flight 871, 882
 Gas envelope 860, 864, 865, 866, 866, 867, 870; Capacity 860; Diagram 866
 Gondola 859, 861, 877, *cover*; Diagram 866
 Hang glider 859, 860, 872
 Landing 858-859, 871, 876-879, 881, 882
 Launch 859, 860, 870
 Oxygen masks 862, 865, 869
 Piloting 865-866, 874; Diagram 870-871; Pressure systems 864, 865, diagram 871; *see also* Ballast, *above*
 Supplies 865, 869
 Weather shield 861, 866, 869; Temperature raised by 869
Dream On, Vancouver. By Mike Edwards. Oct., 467-491
 Dresden, East Germany: *Treasures of Dresden*. By John L. Elliot. Nov., 702-717
 Dresden Royal Castle: Bombing damage 717
 Dresden treasures (exhibit): National Gallery of Art 692, 700, 701, 701, 706-707
 Drought: Georgia 230, 235, 239; Pacific Northwest 197-198
 Drougou, Styliani 57
 Drummers: Japan 82, 82-85
 Druzes (Islamic sect) 332, 337, 339-340, 340
 Dubuffet, Jean: *Sculptures* by 697
 Duff, Tom 92; Vineyards 94
 Duggan, Cindy 456, 459, 462
 Dune system: Sand Hills, Nebr. 493, 494-495, 499, 508; Dune types 508, "choppies" 508, 510, 517; Formation 499
 Dunedin, South Island, New Zealand 248; Wool auction 257
 Dürer, Albrecht 702, 713
 Duroc (swine breed) 404
 Duruz, Jabal ad, Syria 337
 Dutang, Paul 536
 Dutch East India Company: Logo 567; Ships: *Bantam 566 see also Witte Leeuw*, *outlined*
 Dutch National Archives, The Hague: *Witte Leeuw* cargo manifest 566

E

Eakin Fruit Company, Yakima, Wash.: Apple processing 611
 Earth: *Voyager's Historic View of Earth and Moon*. July, 53
 East Germany *see* German Democratic Republic
 East Indies: Trade routes to 562, 564, 566, 576
 Eastalco Aluminum Company: Frederick, Md.: Casting ingots 196-197
 Eastcott, John: *New Zealand's High Country*. Aug., 246-265
 Ebla (ancient city) 337, 340; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759
 Calendar 750
 Chronology 731, 733, 736, 737, 740, 741, 748, 750, 755, 759
 Craftsmanship 735, 735, 738, 740, 741, 752
 Decline and obscurity of 731, 734, 748
 Deities 740, 745, 750, 755
 Governmental districts 745
 Intercity relations 740, 755 *see also* Mari; *and* Trade; Tribute; Wars, *below*
 Kings 734, 735, 736, 740, 741, 743, 744-745, 750, 755 759; Elected 744, 755; Obligations 741, 744, 745
 Language 731, 734, 748, 749, 759; Derivative languages 749; Name equivalents 736, 737
 Map locating 734
 Occupations 731, 735, 741, 745 *see also* Scribes
 Population 741, 743
 Structures 731, 738, 740, 741; Depicted 744-745; Palace 731, 737, 740-741, 742-745
 Taxes 743, 759
 Textiles 735
 Trade 731, 734, 737, 759; Depicted 752-753
 Tribute received 735, 755
 Wars 740, 741, 750, 755; Depicted 732-733
 World power (ancient Middle East) 731, 735, 740, 741, 744
 Ebla tablets 340; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759
 Accounting 730-731, 748, 750, 758; Depicted 751
 Age of 731, 748
 Bilingualism 734, 748, 749; Semitic 731, 734, 748, 749, 759; Sumerian 734, 748, 749
 Chronicles 735, 736, 745, 750; Military communiqué 740, 755
 Chronology, may refute accepted 735, 736
 Deciphering 734, 748, 749, 749
 Dictionary, bilingual 734, 749
 Historical and archeological im-

- portance 731, 735 *see also* Biblical studies; Chronology, *above*
- Number of 731, 747; Significance of number 731, 733, 735
- Personal names, significance of 733, 736, 737, 740, 745
- Place-names 733, 734, 735, 736
- Storage of (archive) 740-741, 746-747, **750-751**, 759
- Ecology: Disruptions in: Grand Canyon 18, 22, 23, 27, 30; Ecological disaster *see* Oil spills
- Ecosystems: Hot springs: Yellowstone National Park 845, 848
- Ecuador *see* Galapagos Islands
- Edessa, Greece 63
- Edict of Nantes: Revoked 553
- Edmondson, Betty L. **614**
- Education: Home schooling 251, 254, 832; *see also* Schools
- Edwards, Mike: *Dream On, Vancouver*. Oct., 467-491
- Edwards Air Force Base, Calif.: Space Shuttle orbiter test flight **210-211**
- Egypt: Postage stamp **798**; Relations with Syria 327, historical 330, 759
- Egypt, ancient 731, 750, 759, 806; Boats 811, 812, 813; Pottery 759, 813, **816**; Trade routes 813
- Eichman, Jacqueline **413**
- Eiler, Terry and Lyntha: *Yesterday Lingers on Lake Erie's Bass Islands*. July, 86-101
- Elamites 741
- Elat, Israel 722, 728
- Eldring, Leif 277, 278
- Electricity: Aluminum industry 186, 189, 191, 193, 196-197, 204; Cost, retail 632; Transmission cables 186, **190-191**, 249; *see also* Hydroelectricity
- Electrolysis: Aluminum smelting 193, 196, 198
- Eliot, John L.: *Treasures of Dresden*. Nov., 702-717
- Elliot Lake (town), Ontario: Uranium mine 781
- Endangered and threatened species 23; Kaibab squirrel 41, 44; Squawfish 22
- Energy sources: Nuclear power 577, 790-791; *see also* Coal; Electricity; Natural gas; Oil
- England: Oil spill (1967) 108, 121; Smallpox: 17th century 797-798, 20th century 797, 800
- English Channel: Oil spill (1978) 1, 107, 108, 120, *Superspill: Black Day for Brittany*. By Martin Rogers. July, 124-135
- English East India Company: 1613 battle report 576
- Enterprise* (Space Shuttle orbiter): Test flight **210-211**
- Environmental concerns 1; Palau's coral reefs 137; Svalbard, Norway 272, 282-283; *see also* Grand Canyon, Ariz.; Recycling
- Environmental Protection Agency (EPA): Gasoline-consumption figures 203; Oil-spill expert, chief 118; Oil-spill research 120; Recycled materials, report on 211
- Epitaph for a Killer?* (smallpox). By Donald A. Henderson. Dec., 796-805
- Equatorial Undercurrent, Pacific Ocean 371
- Erie, Lake, Canada-U.S.: *Yesterday Lingers on Lake Erie's Bass Islands*. By Terry and Lyntha Eiler. July, 86-101
- Eriksen, Bruce 476
- Eritrea (province), Ethiopia 519, 520, 521, 523
- Erosion processes *see* Grand Canyon, Ariz.
- Espinosa Point, Fernandina (island), Galapagos Islands 377, 379
- Esso Atlantic* (ULCC): Capacity 115; Cut-away diagram **113-115**; Deadweight tons 113
- Esso Pacific* (ULCC) 113; Construction crew **116, 122-123**; Interior **116**
- Ethiopia: Border changes (1897-1955): Maps 521; Border wars 519, 520, 521, 525, 798, 804; Smallpox-eradication campaign 797, 798, 804, health officer **796, 799**
- Euler, Robert 28, 29, 40-41
- Euphrates (river), Southwest Asia 353, 360, 815; Ancient civilizations 741, 755, 757, 806, 810, 812, 815; Confluence with Tigris 755, 806, **810-811**, 812, 815; Dam 327, **338**, 339, 353-354
- Europe: Oil imports 107, 113, 115, 124; Smallpox eradication 798, 800
- European wild boar 403, **404**, 411
- Euport, Rotterdam, Netherlands 124
- Evans, Betty, and daughter **510**
- Exbrayat, Rosine **541**
- Explorers: New World: Animal introduction: Churro sheep 434, 436, pigs 400; *see also* Arctic explorers
- Extinct species: Rampart Cave, Ariz.: Fossils 17; *see also* Dinosaurs
- Extraterrestrial life: Messages to 53

F

- Fabre, Georges 560
- Fagerstroem, Katja **772**
- Faith healing: New Mexico 426, 432
- Farias, Jesse 618
- Farlow, James 176
- Farmer-rancher wars: Sand Hills, Nebr. 512, 516
- Farmers' strike: Georgia 230-231, **234**
- Farms and farming *see* Agriculture
- Faulkner, Douglas, photographer: *Dazzling Corals of Palau*. July, 136-150
- Faylakah Island, Kuwait: *Tigris's* near-mishap 814, 815
- Fences, portable corral **514**
- Ferries: Bass Islands, Ohio 86, **98**; Vancouver, British Columbia **466-467**, 468
- Ferrone, Lucy Ann 773
- Festivals: *Day of the Rice God* (Chiyoda, Japan). By H. Edward Kim. July, 78-85; Moxee Hop Festival 617-618; Muslim: Festival of Sacrifice 588; Theater: Ontario, Canada 789
- Fido (pig) *The Joy of Pigs*. By Kent Britt. Sept., 398-415
- Field day: Cherry County, Nebr., schools **496-497**
- Fink, Alain 566, 569, 574
- Firefighting: Aluminized asbestos suit **189**; South Island, New Zealand 251, 264
- Fires: Grand Canyon, Ariz. 17
- Fish runs: Reduced numbers 625, 628
- Fisher, Allan C., Jr.: *Where the River Shannon Flows*. Nov., 652-679
- Fishes: Batfish **372-373**, 377; Blenny 373; Bream 652, 669, 674, 675; Bioluminescence: Ceratoid anglers 727, *see also* Photoblepharon, outlined; Grunts **364-366**, **378-379**; Leaf fish **374-375**; Lionfish 727, 728; Oil pollution, killed by 124, 133; Red snapper **821**; Squawfish 22; Tench 669, **675**; Trout: Cutthroat 855, rainbow 22, **23**, 855; Walleye **785**
- Fishing, commercial: Brittany, France: Oil-spill damage 124, 128, 132, 133; Georgia 240; Ireland 669, 672, 674, 676; Lake Erie 88, 92, 95, 99, catch 92; Off-shore harvesting, excessive 625, 628; Palau Islands 137; Vancouver, British Columbia 489; Yakima Indians 625, 630, seafood processing plant 625, 627, 630
- Fishing, dipnet **628-629**
- Fishing, sport: Ireland **675**; Lake Erie 86, 88, 90, 92, ice fishing 100, **100**; Ontario, Canada 784
- Fishing rights: Yakima Indians 625
- Fitzsimons, Sean 663
- Flashlight Fish of the Red Sea* (Photoblepharon). By Eugenie Clark. Nov., 719-728
- Flathead National Forest, Mont. 294; Mountain goat study 287, 296
- Fleming, Jock 434
- Fletcher, John 782
- Flinn, H. C. 472
- Float homes **474-475**
- Florac, France 554, 555, **558**, 560
- Floreana (island), Galapagos Islands: Marine life **364-366**, **378-379**
- Fodrea Community School, Columbus, Ind. **388-389**

Foege, Bill 804
 Folk festival: Japan: *Day of the Rice God*. By H. Edward Kim. July, 78-85
 Forest products: British Columbia 468, 472-473, 478, 487; Georgia 243; Yakima Indian Nation, Wash. 618, 627
 Forney, Don and Olive, and family 507, 508
 Forney ranch, Sheridan County, Nebr. 500, 507-508; Summer pasture 500-501, 508
 Fort George, Ontario: Reconstruction 792-793; War of 1812 792-793
 Fort Hope, Ontario: Indian village near 787
 Fort Niagara, N. Y.: War of 1812 792-793
 Fort Niobrara National Wildlife Refuge, Sand Hills, Nebr.: Cattle and bison auction 512, 512-513
 Fort William, Ontario: Reconstruction 788
 Fossett's Circus: Limerick, Ireland 666
 Fossey, Dian 437
 Fossil dating: Rock strata 644
 Fossilization: Coyote bones 846
 Fossils: Color indications 644; Grand Canyon 17, 45; *see also* Dinosaurs
 Fotheringham, Allan 467
 Foursin, Arsene 123-124
 Fourth of July: Atlanta, Ga. 220, 221
 Fouts, Roger 461
 Fouzilhat, France 544
 Foynes, Ireland 672
 France: Supertanker simulators 119, 121; Truffle hunting 405, 408, 410; *see also* Brittany; Cévennes
 Franco, Tomas 417
 Franklin, Benjamin: Quoted 410
 Franz Theodore Stone Laboratory, Gibraltar Island, Ohio 99
 Fraser River, British Columbia 472-473, 487, 489
 Frauenkirche ruins, Dresden, East Germany 707
 Frazer, James G.: Quoted 405
 Frederick I, Holy Roman Emperor (Frederick Barbarossa): Death of 343
 Frederick VII, King (Denmark): Helmet, aluminum and gold 198
 Frederick, Md.: Aluminum plant 196-197; Recycling program 204
 Fredonia, N. Y.: Natural-gas well, first 647, 649
 French Marine Shell: Supertanker, world's largest 107, 123-124
 French Somaliland, former 520; Maps 521
 French Territory of the Afars and the Issas, former 519, 520
 Frescoes, ancient Greek 54, 55, 70, 72, 74, 76
 Fridman, David 720, 722, 723, 726, 728

Frith, Doug 781
 Frost emergencies: Fruit growing 615; Protection of trees: Ice coating 608, 612, smudge pots 612, 613, 615, wind machines 612
 Fruit and fruit growing: Grape growing 92, 94, 94-95; Pear growing 608, 613; *see also* Apple growing, *outlined*
 Fugères, Albert du Lac de 541, 544
 Fuller, R. Steven: *Winterkeeping in Yellowstone*. Dec., 829-857

G

Gabriel (archangel) 584, 589
 Gainesville, Ga. 225-226
 Galapagos Islands, Pacific Ocean: *Undersea Wonders of the Galapagos*. By Gerard Wellington. Sept., 363-381
 Galdikas-Brindamour, Biruté 437
 Gangloff, Michel 566, 569
 Garbage: Recycling projects 208, 208, 209, 211
 Garden, formal: Niagara Falls, Ontario 760-761
 Gardner, R. Allen and Beatrice 440-441, 449, 451
 Gardy, Petro 485
 Garfield, James 44
 Garrett, W. E.: *Grand Canyon: Are We Loving It to Death?* July, 16-51; photographer: *Grand Canyon*. July, 2-15
 Garrykennedy, Ireland: Fiddle maker 667, 673
 Gas: Synthetic 651, manufacturing proposed 634; *see also* Natural gas, *outlined*
 Gastown (district), Vancouver, British Columbia 472, 475-476, 477, 480
 Gauls: Aegae, sack of 63-64, 70
 Gaynor, Thomas and Michael 674, 679
 Geer, Ernie 638-639
 Gelb, Ignace J. 735
 Gems: Dresden art objects 706, 708, 710, 712-713
 Geology: *The Grand Canyon*. July supplement; *Grand Canyon: Are We Loving It to Death?* By W. E. Garrett. July, 16-51; *Natural Gas: The Search Goes On*. By Bryan Hodgson. Nov., 632-651
 Geopressure zones: Natural gas 632, 635, 638-639, 641, 647, map locating 645-647, wells 635, 638, 638, 639
 George Bernard Shaw festival: Niagara-on-the-Lake, Ontario 789
 Georgia, Lowell, photographer: *Natural Gas: The Search Goes On*. Nov., 632-651
 Georgia: *Georgia, Unlimited*. By Alice J. Hall. Aug., 202-245
 Agriculture 228, 229, 231, 238, 239

The arts 218, 222, 224
 Capital *see* Atlanta
 Civil War 218, 241; Reconstruction 224-225
 Coastal area 229, 235, 239, 240-241, 241, 242
 Facts and figures 215
 Farmers' protest 230-231, 234
 Flag 215
 Governors 213, 214
 History, colonial 213, 215, 217, 224-225, 231, 239, 241
 Map 214-215
 Motion-picture filming 227-228
 Mountain region 236-237, 241-242
 Piedmont region 215, 241
 Racial cooperation 214, 222
 Religion 214, 222, 244-245
 South Georgia 213, 216, 216-217, 228-229, 230, 231, 235, 239, 240-241, 241, 242-245
 Trade, international 215, 242
 Urban renewal: Atlanta 212-213, 214, 217, 218-219, 220, 221, 222; Savannah 239, 241, 244-245
 Wetlands, protected 228-229, 235, 239
 Kaolin 195, 201
 Georgian Bay, Ontario 791, 794
 German Democratic Republic (East Germany): Artworks 701, *Treasures of Dresden*. By John L. Eliot. Nov., 702-717
 Geysers: Yellowstone National Park 839, 844, 845, corrosiveness of spray 839, ice nodule formation 839, 844, wildlife, dangers to 839, 846
Giants That Move the World's Oil: Superships. By Noel Grove. July, 102-124
 Gibraltar (island), Ohio 86; Research station 99
 Gilhooly, Vincent 660
 Glacier National Park, Mont.: Mountain goat study 284, 287
 Glaciers: Svalbard, Norway 269, 277, 281, 282-283
 Glanzman, Louis S., artist: *Ebla: Splendor of an Unknown Empire*. Dec., 730-759
 Glen Canyon Dam, Ariz. 25, 44; Colorado River, altering of 20, 22, 23
 Glen Lyon Station, South Island, New Zealand 254, 262-263
 Globtik Tokyo (ULCC) 111-112; Deadweight tons 110; Paint, weight of 104
 Glossbrenner (freighter): Woman deckhand 769
 Gloucester, Va.: Civil War era house 207
 Gluckauf (1886 prototype tanker): Diagram 115
 Glynn County, Ga.: Detention Center 235; Marshes of 229
 Goats *see* Mountain goats
 Gobi Desert, Mongolia: Paleontological expeditions 164, 170-171

- Goddard Space Flight Center, Md. 322
- Godley Peaks Station, South Island, New Zealand: Sheep muster 252-253, 258
- Golan Heights, Syria: Israeli occupation 326, 357, 360-361; Shelling from 357
- Gold rush: South Island, New Zealand 264
- Golden Horseshoe (megalopolis), Ontario, Canada 772, 776
- Golding, Gordon 541, 555
- Goldwater, Barry 24-25
- Goldwork 198, 199, 708, 710, 712-713, 716; *see also* Macedonian tomb
- Golf: Georgia 226-227, 242
- Good Friday rituals: Penitentes sect 431, 432
- Goodall, Jane 437
- Gordy, Frank 245
- Gorillas: *Conversations With a Gorilla*. By Francine Patterson. Oct., 438-465; Fossey study 437
- Gorsse, Louis 566, 569, 570
- Gospel Conveyors (musicians) 219
- Goudet, France 541, 544
- Gough, Hugh 669, 675
- Goulet, Montagne du, France 548, 550, 557
- Grain elevators: Ontario, Canada 788-791
- Grand Canyon, Ariz.:
The Grand Canyon. July supplement
Grand Canyon. By W. E. Garrett. July, 2-15
Grand Canyon: Are We Loving It to Death? By W. E. Garrett. July, 16-51
 Archeology 28, 40; Finds 18-20, 39, 40, 41
 Climates 41, *supplement*;
 Pleistocene Epoch 41
 Depths 16, 22, 23, 24, 29, 40, 45, 46
 Deterioration of *see* Grand Canyon National Park, *outlined*
 Erosion processes 23, 38, 40, 42, 43, *supplement*;
 Pinnacle formation 41-42
 Exploration 32, 40, 41, 44, 51
 Geology 23, 25, 32, 41-42, 45, *supplement*;
 Stratigraphy 25, 42, 43, 45; Volcanism 23, 49
 Indians: Pre-Columbian 29, 32, 38, 40, 41, relics 18-20, 39, 40, 41; Present-day *see* Havasupai Indians
 Length 16
 Mapping of 36, 37, 37
 Maps 32-34, *supplement*
 Side canyons 8-10, 14-15, 25, 29, 35, 50-51
 Side creeks 14-15, 42
 Storms 24, 25
 Vegetation *supplement*; Exotic 22; Native 25, 41, 44
 Wildlife *supplement*; Exotic 22, 23, 27-28, 30, 31, 38, damage from 22, 23, 27, 30, 30; Imbalance, causes of 18, 27, 30; Native 18, 21, 22, 27, 41, 44, 51
see also Colorado River, *outlined*; Grand Canyon National Park, *outlined*
- Grand Canyon National Park, Ariz.:
Grand Canyon. By W. E. Garrett. July, 2-15
Grand Canyon: Are We Loving It to Death? By W. E. Garrett. July, 16-51
 Accommodations 24, 35
 Assets, value of 28
 Campsites 17-18, 29
 Canyon crossing, means of 22, 33
 Deterioration of 17, 18, 18-19, 20, 24, 45; Burro damage 27, 30, 30; Dam construction 20, 22, 23, 25; Ecological damage 17, 18, 20, 22, 23, 27, 30; Mule-trip damage 16, 29; Recommended counteraction 22, 24, 26-27, 35, 40, 46; River-trip damage 16, 17, 22; Visitors: Excessive number 17, 20, 22, 24, 29, 46, fires set by 17, waste generated by 22, 27, 46
 Flights, sight-seeing 17, 41
 Hikers 17, 20, 25, 29, 29; Casualties 17
 Litigation 17, 26
 Management *see* National Park Service, *outlined*
 Maps 35, *supplement*
 Mule trips 12, 16, 28-29, cover
 North Rim 2-3, 16, 23, 41, 42, 48-49
 Park status, history of 18, 24-25; "wilderness" designation proposed 35
 Public transit 24
 River trips *see* Colorado River, *outlined*
 Size 25; 1975 acquisition 25, 28, 35; Proposed additions 28, 35, 42, 44, map 35
 South Rim 7-8, 24, 29; Overdeveloped 20, 24, 36
 Study of 22, 23, 26; Burro problem 24, 27
 Trails 12, 17, 20, 23-24, 28, 29, cover; Map 33-34; Mapping of 37
 Views, wide-range 2-15
 Visitors, annual number of 17, 22, 32
- Grand Canyon of the Yellowstone River, Wyo. 829, 832
- Grand Council of Treaty Number 9: President 782, 784, 787
- Grande Randonnée (network of hiking tracks), Cévennes Mountains, France 540, 548, 560
- Grange Lough, Ireland 663-664
- Grantz, Arthur 650
- Grape growing: Bass Islands, Ohio 92, 94, 94-95
- Grafer, Bert 121, 123
- Grasslands: Haud, Ethiopia 521; *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517; Loss of: Arizona 44
- Grave robbers 57, 70
- Gravity map: Natural-gas prospecting 643
- Gray, William O. 123
- Grazing operations: Public domain 42, 44
- Great Lakes *see* Erie, Lake
- Great October Fair (horse fair), Ballinasloe, Ireland 662-665, 676
- Greaves, ancient Macedonian 61, 64-65, 75-76
- Greece *see* Vergina
- Greek art, ancient: Vase painting 405; *see also* Macedonian tomb
- Greenfield Village, Dearborn, Mich.: Aluminum exhibit 205
- Grenoble, France: Supertanker simulators 119, 121
- Grizzly bears 832, 835, 839, 856; Assaults 832, 835, 838, 855; Management of 838; Protection against 832, 835; Skull 835
- Groundwater: Georgia 215; Sand Hills, Nebr. 493, 498, 499
- Grouse Mountain, British Columbia 468-469, 470-471
- Grove, Noel: *Giants That Move the World's Oil: Superships*. July, 102-124; *Superspill: Black Day for Brittany*. July, 124-135
- Gruet, Dave 99
- Grundig, Hans: Painting by 704-705
- Guda, Henri A. M. 194, 201
- Guinea: Postage stamp 798
- Guinness Brewery 656, 663
- Gulf Coast: Natural gas 632, 635, 647
- Gulf Oil 121; Supertankers 103-104
- Guyana: Nationalization of aluminum industry 201
- Guzman, José 429

H

- Haberman, Dave 92
- Haerther, Daryl 410
- Hagar (concubine of Abraham) 585, 588, 597
- Haji (Muslim pilgrimage) 329, 333; *Pilgrimage to Mecca*. By Muhammad Abdul-Rauf. Nov., 581-607
- Accommodations 599, 602-603; Tent cities 578-580, 588, 598-599
- Animal sacrifices 585, 588, 601
- Clothing 581, 582-583, 583, 584
- Commandment 581, 589
- Epidemics, former 603
- Pilgrims, number of (1977) 582
- Restrictions 582, 583, 584, 588, 601
- Rites 584-585, 588, 589, 592, 592-597, 599, 600-601, 606-607; Broadcast of 599

- Season 587
Travel, various modes of 582-583, **584-585**, 588, **604-605**, 607
Hajji (title) 607
Halal, Muhammad 326
Hall, Alice J.: *Georgia, Unlimited*. Aug., 212-245
Hall, Charles Martin 196, 198
Hall-Hérault process: Discovery 196, 198
Hamah, Syria 346
Hamerstone, Jim 226-227
Hamilton, Lady Peggy **259**
Hamilton, Sir William 259
Hammond, Nicholas 63, 64
al-Hamoud, Najib **340**
Hampshire (swine breed) **404**, 414
Hancock, Warren 411
Hancock Laboratories, Anaheim, Calif.: Heart valves, "bioplasti-cized" **406**, 411
Handball court: Columbus, Ind. **396**
Hanke, Pete **630**
Hanke, Peter and Susan 611, 612, 615, **631**
Hanke orchard, Yakima Valley, Wash. 611, **612**, 615, 631
Hannon, Bruce 208
Harcourt, Michael 480
Harris, Curtis **233**
Harris, Robert: Drawing by **801**
Hartford Ballet **392**
Hartsfield, Roy 776
Hartt, Patrick 782
Harvard University: *Photoblepharon* studies 726-727
Hashimoto, Leonard 489
Hassan Gouled Aptidon 519, **525**
Hastings, J. Woodland 726-727, 728
Hats: Flower-hat costumes **78-79**
Haud grasslands: Ethiopian con-trol 521
Havas Canyon, Ariz. **14-15**, 29
Havas Creek, Ariz. **14-15**
Havasupai Indians 29, 32; Land settlements 29, 35, map 35; Res-ervation **14-15**, 16, establishing of 29
Haversian canals: Dinosaur bones **182**; Human bones **182**
Hawthorne, G. David 221
Hayden Valley, Yellowstone Na-tional Park: Buffalo **836-837**
Hayes, Keith and Cathy 441
Hayre, Kartar Singh **485**
Hayward, Hazel **506**
Head, Sir Francis: Quoted 414
Heart valves, pig: "bioplasti-cized" **406**, 411
Hebrew culture: Elblait influence 737, 740, 749, 754
Hebrew University laboratory, Elat, Israel: *Photoblepharon* studies 728
Heck, Ellen 411
Hedgepeth, William: Quoted 414
Hefner, Robert A., III 641, 648, **651**
Hegira (A.D. 622) 582
Heineman, Louis and Barbara 92, **94**; Vineyards 92
Heinz Steinitz Marine Biology Laboratory, Elat, Israel 722, 726
Helmets: Aluminum and gold **198**; Ancient Macedonian **61**, 72
Henderson, Donald A.: *Small-pox—Epitaph for a Killer?* Dec., 796-805
Henker, Klaus 711
Henson, Matthew 302
Herbert, Wally 302
Herman, Shellie **506**
Hermon, Mount, Syria 326, **357**; Sentry patrol **356**
Hérault, Paul L. T. 196, 198
Heterodontosaurus (dinosaur) **155**, **165**; Skeleton, fossil **165**
Heuze, Léon 62, 63
Heyerdahl, Thor: *Tigris Sails Into the Past*. Dec., 806-827
High Country Field Day: South Is-land, New Zealand 258
High-voltage power lines, alumi-num 186, **190-191**
Hill, Robin 540
Hiller, Barbara 456
History, ancient *see* Civilizations, early
Hitchcock, Kathleen **619**
Hitchcock, Maurice **618**, **619**
Hodgson, Bryan 577; *Natural Gas: The Search Goes On*. Nov., 632-651
Hog breeds 398, 400, **404**; Number of 413
Hogan, Hush 672
Hoge, Dianne and Ron **397**
Holland Marsh, Ontario: Farms **776**, **778-779**
Holme, Norman 134
Holy Family Church, Chimayo, N. Mex. 416
Home schooling 251, 254, 832
Homesteaders: Sand Hills, Nebr. (pre-1910) 512, 516-517, war with ranchers 512, 516
Homs, Syria 346, 348
Honeymooners: Niagara Falls, Ontario 761, 765
Hop growing 617-618, **620-621**; Drying of cones **621**
Horlings, David 777
Horlings, Harry and Jane 776-777; Farm **778-779**
Hormel Institute of the University of Minnesota 412
Hormuz, Strait of 818, 824
Horn of Africa: Border changes 521, maps 521; Map 520; *Small-pox—Epitaph for a Killer?* By Donald A. Henderson. Dec. 796-805
Höroldt, Johann Gregorius 714
Horse fairs: Aurora, Ontario 772; Ballinasloe, Ireland **662-665**, 676
Horses 251, **255**, **502**, **772**; Appa-loosas **232**; Ballinasloe **662-665**, 663; Extinct 17; Work horses 259, 493, 499, **501**, 508, **510**, **514-515**, **630**
Hot springs: Yellowstone Nation-al Park **833**, 839, **843**, 848, 851, algae 839, 845, 848, ecosystem 845, 848
Hotel complexes: Atlanta, Ga. **218-219**, 220; Saudi Arabia **602**, 603
Hotton, Nicholas 178
How Earth and Moon Look to a Space Voyager. July, 53
Hubert, Philippe 118
Hudaybiyah, Mosque of, Saudi Arabia 582
Hudson, W. H.: Quoted 414
Hudson Bay, Canada: Polar bears **783**; Tundra **784-785**
Hudson's Bay Company: Ontario, Canada 788
Hughie, Claudius **786**
Huguenots 557
Hull, Quebec, Canada 767
Humboldt Current (Peru Current), Pacific Ocean 371
Hunt, Alfred M. 197, 198
Hunters and hunting: Geese **786**; Mountain goats 295, 296; Sval-bard, Norway 272, 279, 281
Huxley, Thomas Henry 164, 173
Huxtable, Ada Louise 685
Hyannis, Nebr.: Cafe **506**
Hyatt Regency (hotel), Atlanta, Ga. **218-219**, 220
Hydrates, methane 622, 647, 650-651; Map locating 645-647
Hydraulic fracturing (gas-recov-ery method) 637, 645, 648-649; Diagram **636-637**
Hydroelectricity: Ontario, Cana-da 789-790; River Shannon, Ireland 656, 657, 661, 669, 672; South Island, New Zealand 255, 263; United States 151, 191, 196-197
Hydrogen sulfide: Gas-well corro-sion 641, 645, 651
Hypsilophodon (dinosaur) **156**

I

- I. M. Pei and Partners, New York City 694
Ice Age: Grand Canyon animals 17, 41, 44; Ontario, Canada 784
Ice cover, induced: Fruit trees **608**, **612**
Ice-cream parlor: Columbus, Ind. **394**
Ice skaters: Canada **767**, 768, hockey 776
'Id al-Adha (festival): Muzdalifah, Saudi Arabia 588
Idaho: Transmission tower **190**
Idlib, Syria 327, 341
Iguanas, marine **362-363**, 372, 377, 379; Swimming **381**
Iguanodon (dinosaur) **156-157**; Discovery 167
ihram (hajj restrictions) 582, 583, 584, 588, 601
Illinois Natural History Society: Powell Expedition (1869) 44
India: Smallpox 804
Indian lands: Havasupai-U. S. transactions (1975) 29, 35; On-

- tario Indians: Present-day 782, 784, 787, Treaty Number 9 (1905) 782; Water rights 625; Yakima-U. S. transactions (1855, 1887) 624-625
- Indian reservations: Grand Canyon region 14-15, 16, 29, map 35; *see also* Yakima Indian Nation
- Indian sign language 431
- Indiana *see* Columbus
- Indians (Asian): Vancouver, British Columbia 482-483, 485, 485
- Indians of North America: Grand Canyon: Pre-Columbian 29, 32, 38, 40, 41, relics 18, 20, 39, 40, 41; Ontario, Canada 782, 784, 786, 787, 787, 788; Sangre de Cristo region, N. Mex. 431, 431, 434; Vancouver, British Columbia 480, 481, 482; *see also* Havasupai Indians; Yakima Indian Nation
- Indians of South America: Aymara Indians 808, 810-811, 815
- Indus River, Asia: Mohenjo Daro 823, 825
- Indus Valley, Pakistan: History 817, 818, 823, 825; Natives 823; Ruins 822-823, 825; Sea links 806, 811, 813
- Inflatable boom (barrier): Oil-spill containment 130
- Innes, Allan and Jessica 259, 264; Ranch 259
- Innes, Pete and Janet, and family 250, 251, 259, 264; Ranch 250, 251, 259, 264, size 251
- Innes, Sara 259, 264
- Insect life: Thermal areas 845, 848
- Inter-Lake Regatta: Bass Islands, Ohio 97
- International Bauxite Association 194, 201
- Iraq: Capital of Islam (A.D. 750) 335; Desertification 755, 757; Marsh Arabs 808-811, 815; Relations with Syria 326, 327
- Iraq, ancient 806, 813, 815, 818 *see also* Mesopotamian kingdoms
- Ireland, Republic of *see* Shannon, River
- Iron: Ancient Macedonian artifacts 61, 63, 70, 71, 72
- Irrigation: Georgia 229-230; Sand Hills, Nebr.: Center-pivot systems 517; South Island, New Zealand 258; Syria 327, 332, 338-339, 346, 354; Yakima Valley, Wash.: Canals 609, 610, Yakima Project 614
- Irwin, W. G. 386
- Is This the Tomb of Philip of Macedonia?* By Manolis Andronicos. July, 55-77
- Isaac (son of Abraham): Sacrifice of, attempted 600
- Ishmael (son of Abraham) 585, 589, 597; Sacrifice of, attempted 589, 600; Shrine built by 582, 585, 588, 589
- Islam:
- Iraq capital of (A.D. 750) 335
 - Pilgrimage to Mecca*. By Muhammad Abdul-Rauf. Nov., 581-607
 - Almsgiving 589
 - Animal sacrifices 585, 588, 601
 - Calendar 585, 587, 588
 - Creed: Five Pillars of Islam 589
 - Equality 581-582, 583
 - Fasting 589
 - Hegira (A.D. 622) 582
 - Monotheism 582, 584, 585, 589
 - Pilgrimage *see* Hajj, outlined
 - Prayers 578-580, 581, 584, 585, 589, 591, 592, 603, 607
 - Prophets 589 *see also* Muhammad
 - Racial diversity 582
 - Sacred books 589, 595, 601
 - Shrines 584-585 *see also* Kaaba, outlined
 - World distribution: Map 587; Number of Muslims 587, 589
 - Syria Tests a New Stability*. By Howard La Fay. Sept., 326-361
- Island Airlines: Bass Islands, Ohio 90, Tin Goose 90, 91, 92
- Islands, coral reef 140-141; Formation 140-141
- Isle of St. George Vineyards, North Bass Island, Ohio 94, 94-95
- Israel: American aid 326; Druze enclave 337, 340; *see also* Arab-Israeli conflict
- Issas (people) 519, 520, 523, 525
- Italian Archeological Mission in Syria *see* Tell Mardikh excavation
- Ives, Joseph 32; Quoted 13
- Ivory: Ancient Macedonian artifacts 56, 62, 70, 72, 75, 76
- ## J
- Jackson, Henry 224
- Jackson, Maynard 219, 222
- Jackson, Valerie 219
- Jacobson, Leonard 700
- Jamaica: Bauxite 194, 198, 200, 201, mines 194-195, 198
- James, Grover, family 238
- James Bay, St. Helena 564-565, 566, 574; Bottom of 566, 567-569, 569, 570
- James Bay, San Salvador (island), Galapagos Islands 380
- Japan: *Day of the Rice God* (Chiyoda festival). By H. Edward Kim. July, 78-85; Deepwater port 110-112; Imports: Canadian 472, 490, Middle East oil 107, 117, 136, 137; Super-tanker construction 107, 113, 116, 122, crews 116, 122-123
- Japanese (people): Georgia 224, 225, 227
- Japanese-Canadians: Vancouver, British Columbia 489, internment (1942) 489-490
- Japanese Current: Effect on Vancouver climate 468, 471
- Jaramillo, Arturo 422
- Jeffery, David: *A Most Uncommon Town: Columbus, Indiana*. Sept., 383-397
- Jellison, Gail 97
- Jenner, Edward 798, 801
- Jensen, James 164, 166, 167, 171, 177
- Jensen, Marvin 17, 20
- Jet Propulsion Laboratory, Pasadena, Calif.: Voyager spacecraft 53
- Jidda, Saudi Arabia: Airport 581, 582, 582-583, 599; Quarantine center 603
- Jiddah (island), Bahrain: Limestone quarrying 817, 818
- Jizi region, Wadi al, Oman: Copper mine, site of ancient 819, 825, ruins 818, 824-825
- Job Service Center, Yakima, Wash. 618
- Johannes, Robert 137
- Johnson, Per 278-279, 281
- Johnson, Philip 685
- Johnson, Roy 22, 23, 26
- Johnsons Bayou, La.: Natural-gas processing plant 641
- Jones, Bobby 227
- Jones, Paul 632, 635, 639
- Jones, Trinkle 18-19
- Josephine Ford* (airplane) 302
- The Joy of Pigs*. By Kent Britt. Sept., 398-415
- Junior Race Week: Bass Islands, Ohio 96
- Jupiter (planet): Exploration of 53
- ## K
- Kaaba (Muslim shrine), Mecca, Saudi Arabia: *Pilgrimage to Mecca*. By Muhammad Abdul-Rauf. Nov., 581-607
- Aerial view 586
 - Ceremonial washing 589, 592
 - Cleansed by Muhammad 584, 585, 588, 592
 - Cover, black cloth 584, 585, 593
 - Door, annual opening 589, 593
 - History: Builders 582, 584, 585, 587, 588, 589, 592
 - Prayers toward: Five times daily, 584, 587
 - Relic 585, 592
 - Rites 584, 585, 588, 592, 597, 606-607
- Kachinski, John 100
- Kaibab National Forest, Ariz.: Cattle grazing suspended 42, 44
- Kaibab squirrel 41, 44
- Kaiser Bauxite Company, Jamaica: Mines 198
- Kalaji, Ahmad 361
- Kanab Canyon, and region, Ariz. 35, 42, 44
- Kändler, Johann Joachim 713-714
- Kaolin: Aluminum in 195, 201
- Kaplan, Marion, photographer:

- Djibouti, Tiny New Nation on Africa's Horn.* Oct., 518-533; *Smallpox—Epitaph for a Killer?* Dec., 796-805
- Kassab, Syria 341
- Katholische Hofkirche, Dresden, East Germany: Organ 717; Restoration 704, 717
- Katz, Joseph 651
- Keller Breland's Animal Behavior Enterprises, Hot Springs, Ark. 411
- Kendall, Charles 576
- Kennedy, Donnaca 663
- Kenya: Smallpox-eradication campaign 797
- Kerry Head, Ireland 674
- Key, Lough, Ireland 661
- Keylani, Majida 336
- Khalid, King (Saudi Arabia) 592
- Kidd Creek mine, Timmins, Ontario 781
- Kielan-Jaworowska, Zofia 164
- Kiire, Japan: Supertanker port 110-112
- Killaloe, Ireland 656, 669, 672
- Kilstiffin Bank, Ireland: Legend 679
- Kim, H. Edward, photographer: *Day of the Rice God* (festival in Japan). July, 78-85
- King, Martin Luther, Jr. 222
- King John's Castle, Limerick, Ireland 677
- Kings Point, N. Y.: Supertanker simulator 118-119, 121
- Kirby, Ralph C. 200-201
- Kirchner, Johann Gottlob 714
- Kitchener, Ontario: Mennonites 774-775
- Kiyama, Manabu 224
- Klassen, Henry: Orchard 777
- Knights: Crusader orders 343-345; Saxon-knight exhibit: National Gallery of Art 700, 701
- Knobloch, Hilda 449
- Koko (gorilla) 437; *Conversations With a Gorilla*. By Francine Patterson. Oct., 438-465
- Behavior 444, 452, 456, 457; Lying 438, 458, 459, 461; Reactions to people 443
- Diet 453
- Intelligence 438, 440, 449, 454; Displacement 459
- Keyboard, auditory: Ability to use 453, 454-455, 462, 464
- Personality 438, 440, 449
- Research funding 438, 451, 461
- Vocabulary development 438, 451, 453, 462, 464
- Weight 449, 452, 459, 462
- Kolbu, Alf and Bjørn 276
- Kollock, John 237
- Kon-Tiki* (balsa-log raft) 811, 813
- Kongsfjorden, Svalbard 283
- Koran 589, 595, 601; Quoted 335
- Krak des Chevaliers (crusader castle), Syria 344-345
- Kreuzkirche, Dresden, East Germany 709, 717; Choir 714
- Krüger, Wilhelm: Artwork by 708, 710
- Kuck, Lonn 296
- Kurds (tribe): Syria 332, 333, 339
- Kuteifan, Muhammad 335
- Kwakiutl Indians: Carved house posts 481

L

- Labatt brewery, Toronto, Ontario: Toronto Blue Jays 776
- Lacemaking: France 536, 541
- La Cienega, N. Mex.: Museum 417
- Lacrosse 480
- La Fay, Howard: *Ebla: Splendor of an Unknown Empire*. Dec., 730-759; *Syria Tests a New Stability*. Sept., 326-361
- Lake Erie, Battle of 86, 98; Memorial 86, 91, 98
- Lake Erie's Bass Islands*. By Terry and Lyntha Eiler. July, 86-101
- Lake Hawea Station, South Island, New Zealand 247, 248, 257, 264; Garden 258
- Lakes, ancient: Grand Canyon region 23
- Lamont-Doherty Geological Observatory 650-651
- Lancaster, Henry 204
- Land-claims transactions *see* Indian lands
- Land grants, loss of: New Mexico 419, 422, 434, 436
- Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517
- Lanesborough, Ireland 664
- Langdon, Mary 17
- Lange, James 223
- Langogne, France 542, 546
- Languages: Ancient: Occitan 541, Semitic dialects 731, 734, 736, 737, 748, 749, 759, Western Aramaic 344, 349; *see also* Sign languages
- Lansdowne House (village), Ontario 787
- Lantern, ancient Macedonian bronze 60-61
- Larnax, ancient Macedonian gold 55, 59, 67-69, 75, 76
- Laser: Mapping, used in 34
- Latakia, Syria 341; Aerial view 342-343; Orchards around 341
- Laterite: Aluminum ore, possible 201
- Lava Falls, Grand Canyon 16, 20, 22, 45, 49, 51
- Lava flows: Grand Canyon 23, 48-49
- La Vernède, France 555
- Laxalt, Robert: *New Mexico's Mountains of Mystery*. Sept., 416-436
- Lead: Recycling 204
- Leakey, L. S. B. 437
- Lebanon 332; Druze enclave 337; Syrian troops in 341
- Lee, Art 478
- Lee, Bernard 222
- Lee, Bob 480
- Lee, Douglas: *Day of the Rice God* (festival in Japan). July, 78-85
- Lee, James 121
- Lees Ferry, Ariz. 40, 44, 45
- Le Havre, France: Aerial view 872-873
- Lehmbruck, Wilhelm: Sculpture by 693
- Leland, Hazel 617
- Lemonade stand, child's: Put-in-Bay, Ohio 89
- Le Monastier, France 535; Lace-making 536, 541; Shoes, wooden 541; Thatch roof 540-541
- L'Enfant, Pierre Charles 683, 688, 694
- Leochares (ancient Greek sculptor) 75
- Le Pont de Montvert, France: History 553, 554; River 558-559
- Le Puy, France 536, 539
- Les Baux, France: Bauxite 192
- Lew, Frank 478
- Leyden, Ann 658
- Leyden, Matt 658, 659
- Liberal Party: Canada 478
- Liberia: Supertanker registration 107, 109, 126, number 108
- Life zones: *The Grand Canyon*. July supplement; Wheeler Peak, N. Mex. 419
- Lightning rods: Washington Monument, Washington, D. C. 207
- Limerick, Ireland 656, 672, 676, 676-677; Circus 666
- Limestone: Bahrain ruins 817, 818; Grand Canyon strata 42, 45
- Limopsis* (ULCC) 118
- Limpets: Oil-smothered 131
- Linden, Eugene 462
- Lions Gate Bridge, Vancouver, British Columbia 486
- Liquefied natural gas (LNG): Importation 633, price of 634, 641; Transport container 633
- Literature: Ancient Middle East 754, 757, 759
- Little, Drewry 414
- Littlehales, Bates, photographer: *The Sunken Treasure of St. Helena*. Oct., 562-576
- Litton, Martin 44, 46
- Live trapping: Bears: Yellowstone National Park 838
- Livestock *see* Cattle and cattle raising; Pigs; Sheep and sheep raising
- Lobsters: Galapagos Islands 374, slipper lobster 374
- Locks: River Shannon, Ireland 656, 657, 661, 672
- Locomotives: Abandoned: Svalbard, Norway 275; Steam: *Royal Hudson* 469
- Log roof: "snail home" 781
- Log na Sionna (Shannon Pot), Ireland 652, 656, 657, 661
- Long, Helen 224-225
- Longhorn cattle 501, 512, 513
- Longyear, John Munro 269
- Longyearbyen, Spitsbergen, Sval-

- bard: *Norway's Strategic Arctic Islands*. By Gordon Young. Aug., 267-283
- Loop Head, Ireland 679
- Lord, Elver 514
- Lord ranch, Cherry County, Nebr. 514
- Los Angeles, Calif.: Recycling program 204
- Lough Derg Rally: River Shannon, Ireland 667
- Louis IX, King (France): Crusade 343
- Louis XIV, King (France): Protestant uprising against 553, 557
- Louisiana: Natural gas: Geopressure test wells 635, 638, 638, 639, pipelines 640, 641; Single Point Mooring (SPM) port 118
- Loyalists, United Empire: Ontario, Canada 773, 789
- Lozère, Mont, France 536-537, 548; Huguenot uprising 555; Stevenson quoted on 553
- Luc, France: Castle ruins 546, 547, statue atop 546, 547
- Lujan, Pat 417
- Lumber company: Yakima Indian Reservation 618
- Lungkwitz, East Germany 714
- Luther, Martin 713
- M**
- Maalin, Ali Maow 797, 804, 805
- McArdle, George 661
- Macaulay, Lord Thomas Babington 797-798
- MacBride, Daniel K. 87
- McCann, Mary 94
- McClish, Dick 649
- McCormack, Paddy 656, 663, 664, 665
- McCosker, John 728
- Macdonald, Ian 794
- Macdonald, Jim 768
- Macedonian tomb: *Regal Treasures From a Macedonian Tomb*. By Manolis Andronicos. July, 55-77
- Antechamber 57, 59, 67, 75-76
- Artifacts: Bronze vessels and armor 57, 60-61, 64-65, 73, 75; Gold objects 55, 57, 59, 64, 65, 67, 68-69, 71, 75, 76; Iron armor and weapons 61, 70, 71, 72; Ivory 56, 62, 70, 72, 75, 76; Silver vessels 57, 61, 72, 73, 76
- Dating 64, 65, 70, 76
- Diagram 58; Cutaway painting 59
- Discovery of 57, 58, 65, 70, 72; Keystone entry 57, 70
- Frescoes 54, 70, 72, 74, 76
- Identification evidence: Dental dating 69; Diadem 57, 61, 72, 76; Gold casket and quiver 57, 64, 65, 75; Greaves, uneven 65, 76; Ivory likenesses 56, 62, 75, 76; Sunburst emblem 55, 76; Tomb date 70, 76
- Inscription lacking 76
- Sarcophagi 57, 66-67, 72, 75, 76
- Site 57, 58, 64; Map 58
- Skeletal remains 55, 67, 68-69, 75, 76
- McIver, Richard D. 651
- McKee, Wayne 120
- McKenzie, Arthur 109, 120
- Mackenzie Basin, South Island, New Zealand: Hydroelectric project 255, chief engineer 263
- MacMillan Bloedel Ltd. 487
- Macon, Ga. 215, 225, 245; Jewish delicatessen 245; Textile plant 224
- Madson, John: *Land of Long Sunsets: Nebraska's Sand Hills*. Oct., 493-517
- Magan (ancient land) 811, 812, 818; Copper mine 825, remains 819, 825
- The Magic of Aluminum*. By Thomas Y. Canby. Aug., 186-211
- Magnesium: Aluminum alloy 193
- Magnetic-field measurements: Natural-gas prospecting 642
- Mahler, Charles ("Minnow Charlie") 86, 88, 92
- Malacca, Strait of 117; Draft limit 109; Shipping lanes 103, 124
- The Mall, Washington, D. C. 683, 689-691, 692; Drawing 688
- Malula, Syria 344-345, 349
- Mammals: Dinosaurs replaced by 178, 185; see also Gorillas; Mountain goats; Pigs
- Mandeville, Jamaica: Bauxite strip mine 194-195
- Manhattan (supertanker): Diagram 114-115; Northwest Passage voyage 114
- Mann, Kate 459
- Manta ray 373, 376
- Mantell, Gideon, and wife 167
- Manure: Methane produced from 651; Pleistocene sloth 17; Residue usages 651
- Maori (tribe) 249, 251, 264; Legend 255
- Mapmaking 729; Grand Canyon, mapping of (1970-1977) 36, 37, 37; Subsurface, locating gas and oil 644
- Maps:
- Agean region: Macedon, located 58
 - Africa: Horn of Africa 520, 521; Muslim populations 587; Route of Witte Leeuw around 564
 - Arctic region 268; Polar explorations 302-303
 - Asia: Middle East and Early Civilizations in the Middle East. Sept. supplement; Muslim populations 587
 - Atlantic Ocean: Balloon crossings: First successful (1978) 870-871; Unsuccessful (1873-1978) 870
 - Canada: Close-up: Canada: Ontario. Dec. supplement
 - Djibouti, Republic of 520
 - Erie, Lake: Bass Islands, Ohio, located 89
 - Europe, Eastern 704
 - France: Brittany (region): Oil spill (1978) 128; Cévennes (region): Donkey trek 538
 - Galapagos Islands, Ecuador 371
 - Georgia 214-215
 - Grand Canyon, Ariz. 32-34; Grand Canyon, July supplement
 - Grand Canyon National Park, Ariz. 35
 - Mediterranean region: Eastern Mediterranean. Sept. supplement
 - Middle East and Near East: Ancient 734, Early Civilizations in the Middle East. Sept. supplement; Middle East. Sept. supplement; Route of Tigris 812-813
 - Nebraska: Sand Hills region 498
 - New Zealand 249; South Island 248-249
 - Ontario 764; Close-Up: Canada: Ontario. Dec. supplement
 - Palau Islands, Caroline Islands, West Pacific Ocean 136
 - Red Sea: Photoblepharon study area 723
 - Sangre de Cristo (region), N. Mex. 424-425
 - Saudi Arabia: Mecca located 584; Muslim shrines 584-585
 - Shannon, River, Ireland 657
 - Spitsbergen (archipelago), Svalbard, Norway 268
 - Syria 332
 - United States: Natural-gas sources 645-647
 - Vancouver, British Columbia, Canada 468
 - World: Oil spills, major (1967-1978) 108-109; Smallpox eradication (1967-1978) 800; Supertanker routes and ports 108-109
 - Yakima Valley, Wash. 614
 - Yellowstone National Park, U. S. 830
- Mar Sarkis, Monastery of, Syria 349
- Marchena (island), Galapagos Islands: Marine life 376
- Mardikh, Tell, Syria: Beehive houses 336-337; Excavation site near 340
- Mari (ancient kingdom) 353, 741; Ebla, links with 734, 740, 750, 755, 757; Excavation of 353, 750, 757; Kings 755, 756
- Marine biology: *Undersea Wonders of the Galapagos*. By Gerard Wellington. Sept., 363-381; see also Photoblepharon
- Market, Lena 89-90
- Markets: Cattle market 542-543; Country store 230-231; Farmers' market 228; Roadside vendor 231; Suqs 333, 334, 335, 340
- Marlin Rockwell company: Gainesville, Ga. 225-227

- Marr, Ray and Lou 395
 Marsh Arabs 808-811, 815; Superstitions 810, 815
 Marshall, Nancy 489
 Marshes, protected: Georgia 228-229, 235, 239
 Martin, Dave 92
 Martin, Jerry 667, 673
 Martinez, Eduardo 426
 Martinez, Joey 436
 Martinez, Mac 428
 Martinez, Patricio 436
 Marwah (hill), Mecca, Saudi Arabia 585, 588, 597
 Mary Ann, Sister 795
 Masiyah, Tall al, Syria: Apocryphal Tomb of Jesus 339
 Massachusetts: Dinosaur footprints, fossilized 162
 Massie, Curt 100
 Masters Golf Tournament: Augusta, Ga. 226-227, 242
 Masterwork on the Mall (National Gallery of Art). By J. Carter Brown. Nov., 680-701
 Mathematics: Sumer 755
 Mathias, Paul 648
 Matisse, Henri: Cutouts by 692-693
 Matisse, Paul 701
 Matthews, Charles 638
 Matthiae, Paolo 731, 733, 739, 740, 741, 759
 Mauri, Carlo, photographer: *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827
 Maybourn, Ralph 107
 Mayer, John, II 400
 Maynard, Leslie 126-127
 Mazzoni, Stefania 737, 738
 Mead, Frank 235
 Meakin, Howard 475-476
 Mecca, Saudi Arabia: Pilgrimages 329, 333, *Pilgrimage to Mecca*. By Muhammad Abdul-Rauf. Nov., 581-607
 Mecca Inter-Continental Hotel, Saudi Arabia 602; Buffet 602-603; Construction 603
 Mechanicsville, Atlanta, Ga.: Art center 222
 Medallion portraits: Philip II of Macedon 57, wife 62
 Medicine and health: Research: Center for Disease Control, Atlanta, Ga. 223, 798, 800, golden hamsters 340, pigs 400, 407, 411-412; Technology: Pig-derivatives, uses of 406, 406, 411; see also Diseases
 Medicine Valley ranch, Yakima Valley, Wash. 627
 Medina, Saudi Arabia: Founded 582; Pilgrimages 607
 Mediterranean region: *Eastern Mediterranean*. Sept. supplement; see also Syria
 Megalosaurus (dinosaur) 155; Discovery 167
 Meier's Wine Cellars, North Bass Island, Ohio: Vineyards 94, 94-95
 Meissen, East Germany: Porcelain 706-707, 711, 713-714
 Meissen Cathedral, Meissen, East Germany 713
 Mellen, Ida M. 408, 410
 Mellon, Andrew W. 683, 685, 688, 692, 694
 Mellon, Paul 683, 688, 694
 Meltwater: Yakima Valley water supply 609-610; Yellowstone moss gardens 839, 845
 Meluhha (ancient land) 811, 812, 813, 823, 825
 Melville, Herman: Quoted 371
 Menghi, Umberto 483, 487
 Menke, H. W. 170
 Mennonites: Ontario, Canada 774-775, 774-775
 Menzhausen, Ingelore 714
 Menzhausen, Joachim 709-710, 713, 717
 Merca, Somalia: Smallpox-eradication campaign: Last case 797, 804, 805
 Mercy, Mount of, Saudi Arabia: Pilgrims 594-595
 Merino (sheep breed): South Island, New Zealand 252-253, 258, 260-261; Wool from 257
 Mernin, Jerry 838
 Merriman, and area, Nebr. 493, 498
 Mesopotamian kingdoms 731, 733, 735, 736, 741, 748-749, 755, 757, 759, 806, 813; Ebla, interaction with 734, 755; Map 734; see also Akkad; Sumerians
 Metals see Aluminum; Bronze; Copper; Goldwork; Iron; Silver
 Methane: Coal-mine explosions 274, 283, 649; Coal seams 632, 645, 649; Cow manure, produced from 651; Formation 634
 Methane hydrates 622, 647, 650-651; Map locating 645-647
 Methanol: Methane recovery, used for 651
 Metula (supertanker): Oil spill 108
 Mexican immigrants, illegal: Yakima Valley work force 610, 623
 Mexico: Farm-worker wages 623
 Meyer, Grant 152
 Miami, Fla.: Recycling program 204
 Michael (gorilla) 440, 447, 450-452, 453-454, 457, 461, 464-465
 Middle Bass Island, Ohio 86, 99; Winery 94-95
 Middle East, ancient: *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759; *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827; *Tribes to Empires: The Growth of Civilization*. Sept. supplement
 Middle East and Near East 729; *Middle East*. Sept. supplement; Oil export 104, 107, 123, 137; *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827; see also Saudi Arabia; Syria
 Middle Rock, Valdez Narrows, Alaska 118, 121
 Middleton, Merlissie 222
 Migrant workers 609, 610, 611, 618-619, 623; Child labor 610, 623; Education 618, 619, 623; Itinerary, typical 619, 623; Wages 610, 618, 623
 Milani, Tawfiq 349; Wife 347, portrait 346
 Milinski, Heide 717
 Miller, J. Irwin and Xenia 386
 Miller, Mark: *Washington's Yakima Valley*. Nov., 609-631
 Mina, Saudi Arabia: Pilgrims 598-601, 604-605; Stone pillars 585, 588, 599, 600, 601
 Mineral deposits: Calcium carbonate 14-15, 16; Silica 845, 846
 Mines and mining: Bauxite: Jamaica 198, United States 194-195; Copper: Oman, ancient 818, remains 819, 825; Ontario, Canada 770-771, 777, 781; see also Coal
 Ming Dynasty: Porcelain 563, 568, 570, 571-573, 574, 575, 576
 Mini-tankers: Grenoble, France 119, 121
 Mint growing: Yakima Valley, Wash. 610, 617
 Mint-oil distilling 617
 Mirabelli, Josephine 760
 Miró, Joan: Tapestry by 695
 Miserey, France: *Double Eagle II* (balloon) landing near 858-859, 871, 876-879, 881, 882; Golden Guest Book of Honor 881
 Mississippi Embayment, U. S.: Natural gas, possible 641
 Mistral, Frédéric 541
 Mitchell, Margaret 214, 224
 Mitchell, Scott: House designed by 396-397
 Mobiles (Calder) 188, 680-681, 683, 686-687, 694, 698, 701
 Mobley, George F., photographer: *The Joy of Pigs*. Sept., 398-415
 Mobley, William H. 241
 Modestine (donkey) see Donkey trek
 Moffen (island), Svalbard, Norway 278, 279, 281, 282
 Mohammed Abro Mohammed 522
 Mohenjo Daro (ancient city): Ruins 822-823, 825; Seal from 823, 825
 Moir, James 765
 Momatiuk, Yva: *New Zealand's High Country*. Aug., 246-265
 Monaco Glacier, Svalbard, Norway 281
 Monasteries: Ireland: Ruins 657, 667, 668, 669; Monastery of Mar Sarkis, Syria 349; see also Trappist monasteries
 Montana: Fossil sites 152, 158, 158-159, 167; Wildlife see Mountain goats
 Montoya, Candy 432
 Moon: *Voyager's Historic View of Earth and Moon*. July, 53
 Mooney, Paddy 664-665
 Moore, Henry: Sculpture by 682, 684, 694
 Moose Factory (settlement), Ontario 782, 787

Mora, N. Mex. 434
 Morin, James 726, 728
 Moro, Oreg.: High-voltage power lines, aluminum 190-191
 Morris Brown College, Atlanta, Ga. 222
 Moses (prophet) 589
 Moslems *see* Muslims
 Mosques: Saudi Arabia 582, 584, 584, 586, 588-589, 590-591, 606-607; Syria 331, 335
 A *Most Uncommon Town: Columbus, Indiana*. By J. Bruce Baumann. Sept., 383-397
 Motion-picture filming: Georgia 227-228
 Moullet, Jean François 132
 Mounds: Aleppo (ancient city) 358-359, 736-737; Bahrain 816-817; *see also* Macedonian tomb; Tell Mardikh excavation
 Mountain goats: Extinct 17; *Mountain Goats: Daring Guardians of the Heights*. By Douglas H. Chadwick. Aug., 284-296
 Mourgues family 544
 Moxee Hop Festival: Yakima Valley, Wash. 617-618
 Muhammad (prophet) 333; Birthplace 584, 587; Death 588; Farewell sermon 585, 588, 595; Hegira (A.D. 622) 582; Islam revealed to 581, 584, 589; Tomb 607
 Mule deer 21, 30, 499, 504; Population explosion (1906-1924) 18
 Mule trips: Grand Canyon 12, 16, 28-29, *cover*, trail damage 16, 29
 Mullen, and area, Nebr. 510-511
 Mumford, Lewis 188
 Murdoch, Larry, and family 254
 Murmansk, U.S.S.R.: Strategic location 273, 276
 Museums: Albertinum museum, Dresden, East Germany: Green Vault artwork 706, 708, 710, 712-713, curator 709-710, 713, 717; Musée de l'Armée, Paris, France: Aluminum and velvet coat 186-187; Museum of Science, Boston, Mass.: Grand Canyon mapping expedition (1970-1977) 36, 37, 37; Rijksmuseum, Amsterdam, Netherlands: Ming porcelain 575, 576; Zwinger, Dresden, East Germany 709, 711, 713-714; *see also* National Gallery of Art
 Musical instruments: Japan 82-85; Mandolin 516; Organ (1753) 717; Violins and fiddles 509, 667, 673, aluminum 200
 Muslims: Abraham's migration, date given 731; Number of 587, 589, population percentages, map showing world's 587; *see also* Islam, *outlined*
mutawwifs (hajj guides) 584, 587
 Mutualism: *Photoblepharon* and light-emitting bacteria 719, 720, 722, 726
 Muzdalifah, Saudi Arabia: Pilgrimages 585, 588

Mylar-aluminum blanket 186, 188-189

N

Nadler, Hans 717
 Nairobi, Kenya: Smallpox eradication 797
 Napoleon I, Emperor (France) 566, 702
 Napoleon III, Emperor (France) 62, 193, 198
 Nash, Rod 18
Naskeena 4 (tugboat) 487
 National Aeronautics and Space Administration 209; *Voyager* spacecraft 53
 National Arts Centre, Ottawa, Ontario 768
 National Association of Recycling Industries 203
 National Capital Region, Ontario-Quebec 767
 National Center for Resource Recovery, Washington, D. C. 209
 National Farm Show, Washington, Iowa 408-409
 National Gallery of Art, Washington, D. C.:
 Dresden exhibit 692, 700, 701, 706-707; Number of artworks 701
 East Building: *The National Gallery's New Masterwork on the Mall*. By J. Carter Brown. Nov., 680-701
 Architect *see* Pei, I. M.
 Artworks, number of 692
 Benefactors 683, 688, 688, 692, 694
 Central court 680-681, 686-687, 694, 700
 Construction manager 694
 Design 680-684, 683, 685, 686-687, 694, 695, 698, 698, 700; Diagrams 685
 Exhibits, special *see* Dresden exhibit, *above*
 Financing 683, 688
 Library 688
 Mobile 680-681, 683, 686-687, 694, 698, 701
 Opening 682
 Paintings 692-693
 Planning consultant 694
 Project architect 700
 Sculptures 682, 693, 695-697, 699
 Skylight roof 680-681, 684, 685, 694, 695-697, 700; Light effects 683, 698; Movable 697, 698
 Tapestry 695
 Educational activities 688, 692
 Plaza 685
 West Building 685, 691, 692
 NATIONAL GEOGRAPHIC (NGM): Editorial research 151
 Editorials 1, 151, 297, 437, 577, 729
 National Geographic Society: Flag 297
 Grants: Gorilla communication 438, 451; Grand Canyon mapping (1970-1977) 37; Paleontology 164; Project Washoe 441; White gorilla 438; *Witte Leeuw*, search for 566
 Mapmaking 729
 Photos aboard *Voyager* 53
 National Maritime Research Center, Kings Point, N. Y.: Super-tanker simulator 118-119, 121
 National monuments 35; Perry's Victory and International Peace Memorial, Ohio 86, 91, 98
 National Park Service: Bear policy 838; *Grand Canyon: Are We Loving It to Death?* By W. E. Garrett. July, 16-51
 Better-management studies 26
 Pressure groups, dealing with: Appeasement 27-28, 30; Litigation 17, 26
 Recreation-conservation dilemma 20, 26, 35; Recommended solutions 26-27, 35
 Resource-management funds, lack of 28, 30
 Staff 16, 17, 18-19, 20, 22, 23-24, 26, 26, 27-29, 30, 31, 40-41; Inadequacy of 17, 20, 28, 30
 National parks: Ecuador: Galapagos Islands 371, 380; France: National Park of the Cévennes 538, 555; Norway: Svalbard 273, 282; United States *see* Grand Canyon National Park, Yellowstone National Park
 Natural gas 215, 577; *Natural Gas: The Search Goes On*. By Bryan Hodgson. Nov., 632-651
 Consumption rate, U. S. 632
 Energy uses 632
 Flaring of 634, 634, 635, 650
 Formation 634, 642; Generation temperatures 644
 LNG *see* Liquefied natural gas
 Pipelines 634, 640, 641; Map 645-647
 Processing plants 633, 641
 Prospecting methods 642-644; Minimum-depth exploration 642, 647
 Reserve estimates (1977) 632; Unconventional sources 632, 635, 641, 645, 647, 649, 650, map, U. S. 645-647
 Sources *see* Coal seams; Deep basins; Devonian shales; Geopressure zones; Methane hydrates; "tight sands," western
 Wells 635, 638, 638, 639, 639, 641, 648, 650, 651; Depicted 637, 645, 647; First in United States 647, 649
 Natural resources *see* Aluminum; Energy sources
Nautilus, U.S.S. (nuclear submarine) 302
 Nazir, Rashad Salim 821
 Nebraska: *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517

Nebuchadnezzar, King (Babylon) 757
 Nechaev, Nikolai 278
 Nepal: Smallpox 804
 Netherlands: East India trade 562, 566; Supertanker port 124; *see also* Amsterdam
 New Democratic Party: Canada 478, 782
 New England: Oil spill 1, 108
A New Look at Dinosaurs. By John H. Ostrom. Aug., 152-185
 New Mexico Highlands University, Las Vegas, N. Mex. 432, 434
New Mexico's Mountains of Mystery. By Robert Laxalt. Sept., 416-436
 New York, N. Y.: World Trade Center 206
New Zealand's High Country. By Yva Momatiuk and John Eastcott. Aug., 246-265
 Newman, Larry: *Double Eagle II Has Landed! Crossing the Atlantic by Balloon*. Dec., 858-882
 Newman, Sandy 872
 Newnan, Ga. 224-225
 Niagara Falls, Canada-U. S. 761; Hydroelectricity 196-197
 Niagara Falls (city), Ontario 761; Formal garden 760-761; Honey-mooners 761, 765
 Niagara-on-the-Lake, Ontario: Apple orchard 777; Shaw festival 789
 Niagara River valley, Canada-U. S. 792-793
 Nickel mine: Sudbury, Ontario 770-771, 781
 Nicol, Eric: Quoted 472
 Nicomachus (ancient Greek artist) 70
 Nigeria: Smallpox eradication 804
 Nihon University, Tokyo: North Pole expedition 312, 315, 317, 319
 Nimbus 6 (satellite) 316, 322, 324
 Nippur (ancient city), Sumer: Court trial 757; Literature 757; Ruins 755, 757, excavation of 757, legal text found 757
 Nobel Prize winners: Chemistry (1951) 211; Literature (1904) 541
 Nobile, Umberto 302
 Noguchi, Isamu: Sculpture by 695
Norge (dirigible) 283, 302
 Normandeau, Jim 627
 North Bass Island, Ohio 86, 94, 99; Vineyards 94, 94-95
 North Christian Church, Columbus, Ind. 391
 North Pole 267, 269; Explorers 268, 272, 279, 283, 297; *Solo to the Pole*. By Naomi Uemura. Sept., 298-325
 Northover, Bill 623, 625, 627
 Northrop, Barrie 487
Norway's Strategic Arctic Islands (Svalbard). By Gordon Young. Aug., 267-283
 Nova Castella, João da 566
 Nuclear power 577; Ontario, Canada 790, research 790-791

Nusayriyah, Jabal an, Syria 343
 Ny Alesund, Spitsbergen, Norway 268, 269, 274, 282-283

O

Oakes Garden, Niagara Falls, Ontario 760-761
 Oates, Sir Thomas 566
 O'Carolan, Turlough 661
 Occitan (ancient language) 541
 Oceania *see* New Zealand; Palau Islands
 Ochsner, Dave 28, 44
 O'Connor, Kevin 255
 Oersted, Hans Christian 193
 Offenbacher, Hurley 694
 Ogaden (region), Ethiopia 521; Smallpox-eradication campaign 797, 798, 799, 804, vaccine administered 802-803; Somali invasion 520, 523, 528, 798
 Ogier, Rosalie 506
 Oglethorpe, James 239
 Ohio: Shale-gas exploration 649-650; *see also* Bass Islands
 Ohio State University research: Gibraltar Island, Lake Erie 86, 99
 Oil: Formation 634, 642, generation temperatures 644; Glut 104, 121; Industrialized nations: Imports 107, 117-118, 137; Pipeline terminal: Alaska 104, 118; Production: Alaska 635; Prospecting methods 642-644; Sediment depth 647; Svalbard, Norway 267, 274, 276; Syria 332, 346, 348, 353; Transport *see* Supertankers, *outlined*; Wells: Gas flaring 634, 634, 635
 Oil spills: Arctic region and 272-273, 276, 283; Coral reefs and 147; England (1967) 108, 121; France (1978) 1, 107, 108, 120, *Superspill: Black Day for Brittany*. By Martin Rogers. July, 124-135; Map (major spills 1967-1978) 108-109; United States (1976) 1, 108, 120-121
 Oils: Mint oil 617
 Okefenokee Swamp, Ga.-Fla. 228-229
 Oklahoma: Methane plant 651; Natural-gas production: Brine wells 638, deep-basin wells 641, 648, 650, 651
 Old Cienega Village Museum, La Cienega, N. Mex. 417
 Old Faithful, Yellowstone National Park: Snowmobile stop 856
 Oldcoyote, Steve 622
 Olney, Leonard 630
 Olympia, Greece 75
 Olympias (wife of Philip II of Macedonia) 62, 67, 69, 75
 "Olympics": Svalbard, Norway 278, 278, 279
 Oman 818, 824; Ancient land *see* Magan
 Omni International Hotel complex, Atlanta, Ga. 219, 220

Onakawana, Ontario: Coal mine 782
 Oñate, Juan de 423
100 Years Later—Travels With a Donkey. By Carolyn Bennett Patterson. Oct., 535-561
 One-room schoolhouses: Sand Hills, Nebr. 496, 507, School 100 495-497
 O'Neill, Thomas: *Dazzling Corals of Palau*. July, 136-150
 Onions, yellow: Harvest 778-779
 Ontario, Canada:
 Great Cities, and Wilds Within Reach. Dec. supplement
 Ontario: Canada's Keystone. By David S. Boyer. Dec., 760-795
 Bilingualism 764, 767, 768, 773, 794
 Economy 764, 771, 772, 777
 Facts and figures 764
 Farms and farming 776-777, 777-779; Crops 776, 777, 788
 Flag 764
 History 764, 765, 788, 792-793
 Immigrants 762, 773
 Indians 782, 784, 786, 787, 787, 788; Population 782
 Lakes, number of 788
 Maps 764, *supplement*
 Mines and mining 770-771, 770-771, 777, 781
 Natural resources 764, 771, 777, 781, 782
 Parks 782, 788
 Ports 768, 788, 788-789
 Premier *see* Davis, William
 Tourism 761, 765, 776, 784, 789
 Ontario Hydro (power agency) 790
 Orangutans: Galdikas-Brindamour study 437
 O'Rear, Charles, photographer: *Dream On, Vancouver*. Oct., 467-491
 O'Regan, Brendan 672
Ornitholestes (dinosaur) 156; Skelton 164, diagram 168
 Orontes River, Syria 346
 Orpheum concert hall, Vancouver, British Columbia 491
 Ortega, David 420-421
 Ortega, Gabriel 421
 Orwell, George: Quoted 414
 Osbourne, Fanny Van de Grift 561
 Ossabaw Island, Ga.: Pig study 403; Size 403
 Ostrom, John H. 166; *A New Look at Dinosaurs*. Aug., 152-185
 Ottawa, Ontario 765, 767, 768; Ice skaters 767, 768; International Festival of Music 767; Parliament Buildings 766, 768
 Ottawa River, Canada 765, 768; Nuclear research 790
 Our Lady of the Snows (Trappist monastery), France 547-548; Monks 549, 551; Silence, rule of 547, 548; Wine making 538, 548, 550
 Owen, Sir Richard 167, 173

Owen, Robert 117
 Oxen: France 552, 555; Japan 81, 84-85
 Oyster beds, oil-spill damaged: Brittany, France 132

P

Paar, Elmer 623
 Pace, Robert 623-624
 Pacific islands *see* Galapagos Islands; New Zealand; Palau Islands
 Pacific Power & Light Company: Transmission tower installation 190
 Paintings: Ancient Greek 54, 55, 70, 72, 74, 76, 405; *see also* National Gallery of Art
 Pakistan: Ancient civilization 817, 818, 823, 825, ruins 822-823, 825; Smallpox 804
 Palatitsia, Greece 62
 Palau Islands, Pacific Ocean: *Palau's Dazzling Corals*. By Douglas Faulkner. July, 136-150; Supertanker port, proposed 117, 136, 137, 150
 Paleontology: *A New Look at Dinosaurs*. By John H. Ostrom. Aug., 152-185
 Palestine (region) 729; British withdrawal 326; Refugees: Syria 341, 342-343, 343
 Palestine, Tex.: Aluminum plant 198
 Paliadelli, Chrysosoula 57
 Palmer Johnson Inc.: Aluminum yacht built by 202-203
 Palmyra (ancient city): Ruins 349, 350-351, 353
 Paper mill, world's largest: Georgia 243
 Park Hotel, Put-in-Bay, Ohio 88-89
 Parkland Memorial Hospital Burn Center, Dallas, Tex. 406, 411
 Parks, Sid 864
 Parliament Buildings, Ottawa, Ontario 766, 768
 Parteen, Ireland: Fish hatchery 669
 Pasamanick, Benjamin 449
 Pasini, J., III 650
 Pastres, Philippe de 123
 Patterson, Carolyn Bennett: *Travels With a Donkey—100 Years Later*. Oct., 535-561
 Patterson, Francine ("Penny") 437; *Conversations With a Gorilla*. Oct., 438-465
 Pavelka, Phyllis 496, 497
 Peaches: Georgia 214, 231
 Peachtree Center Plaza Hotel, Atlanta, Ga. 213, 220
 Pear trees: Yakima Valley, Wash. 613, blossoms, ice-coated 608
 Pearl Brewing Company, Tex.: Recycling, aluminum 204
 Pearson, Lester 768
 Peary, Robert E. 297, 302

Peat: Ireland 657, 664-665, 678-679
 Peccary 400; Collared 404
 Pei, I. M. 388, 683, 685, 688, 692, 694, 698, 700; Buildings designed by 694, *see also* National Gallery of Art: East Building
 Pella (ancient city), Macedonia 62
 Pelli, Cesar: Architectural design by 382
 Penitentes (religious sect) 418, 420, 425, 430, 431; Crucifixion rituals 418, 420, 432
 Peppermint oil: Extraction of 617
 Perch Lake, Ontario: Radioactive water 791
 Périgord (region), France: Truffle hunting 405, 408, 410
 Permafrost: Methane hydrates 632, 647, 650; Svalbard, Norway 269, 274, 282
 Permoser, Balthasar: Carving by 708, 710
 Perrault, Neil 487
 Perry, Oliver Hazard 86, 89, 98; Quoted 86
 Perry's Victory and International Peace Memorial, South Bass Island, Ohio 86, 91, 98
 Persephone (Greek goddess) 54, 70
 Persian Gulf: Ancient sea routes 813, port of call 816, 817, 818; Gas flares: Satellite image 634; Tigris route 815-816, 818, map 813
 Peru Current (Humboldt Current), Pacific Ocean 371
 Petawawa River, Ontario 788
 Peters, Arnold 782
 Petroleum *see* Oil
 Petroleum engineering: Depicted 642-643
 Petrone, Rocco 209
 Pettinato, Giovanni 733, 735, 748, 749, 749, 750, 755
 Philip II (Macedon): *Regal Treasures From a Macedonian Tomb*. By Manolis Andronicos. July, 55-77
 Assassination 57, 62, 69, 76
 Burial site, possible *see* Macedonian tomb, outlined
 Empire 57, 62; Map 58
 Likenesses: Gold-and-ivory statue 75; Gold medallion portrait 57; Ivory portrait 56
 Personal characteristics 57, 62, 75; Lameness 57, 65, 76
 Reign 57, 62
 Son *see* Alexander the Great
 Wives 62; Cleopatra 67, 75, 76; Olympias 62, 67, 69, 75
 Philipeion (building), Olympia 75
 Philoxenus of Eretria (ancient Greek artist) 70
 Photoblepharon: *Flashlight Fish of the Red Sea*. By Eugenie Clark. Nov., 719-728
 Bacteria: Dependence on 726; Number of 719; Source of luminescence 719, 720, 722
 Behavior 720, 723, 725, 726-727, 728

Breeding 723
 Communications, possible 720, 728
 Eye construction 720, 722; Blink rate 720, 727, 728; *see also* Photophores
 Grouping behavior 723, 726
 Habitat 718-719, 720, 722-723, 723; Artificial 726
 Light intensity 718-719, 720, 722-723, 724, 726
 Range 720, 723
 Size 719, 720, 723
 Photography, aerial stereographic: Map 37, *Grand Canyon*. July supplement
 Photomicrographs: Sand 636
 Photomosaic map 37; *Grand Canyon*. July supplement
 Photophores 719, 721, 723, 726-727; Bacteria in 719, 722; Communication, possible means of 720, 728; Drawings of 720, 724-725; Function 725, 726
 Pictographs, ancient 748
 Pierce, Sam 235
 Pierce Arrow (car), 1925: Aluminum 205
 Pigeon skeleton: Diagram 168
 Pigs: *The Joy of Pigs*. By Kent Britt. Sept., 398-415
 As pets 398, 400, 401, 414
 Behavior 400, 403, 405, 408, 409, 411, 414
 Birth of 402, 403
 Diet 403, 405, 411, 412, 413
 Domestic hog breeds 398, 400, 404; Number of 413
 History of 398, 400
 Intelligence 398, 400, 409, 414
 Marketing of 410, 411
 Medical uses of 406, 406-407, 411, 412, 413
 "minipigs" 400, 401, 407, 411, 412
 Nursing 402-403
 Performing 398-399, 409
 Physical characteristics 403, 404, 405, 406, 408, 409, 411
 Pig farming 410, 411
 Reproduction 403, 411
 Research with 400, 403, 405, 407, 411, 412-413, 414
 Sweat glands, minimal 408, 409
 Training of 398, 400, 408, 409, 411, 414
 Truffle hunters 405, 408, 410
 Vocalizations 400, 414
 Weight 400, 403, 406, 412
 Wild swine 400, 403, 404, 405, 412
 Pigskin: Medical uses 406, 411
 Pilgrimage, Muslim *see* Hajj
 Pine Ridge (region), Nebr. 500-501, 508
 Pioneer spacecraft: Venus probes 53
 Pipelines: Natural gas 634, 636, 640, 641, map 645-647; Oil: Alaska 114, terminal 104, 118
 Pipers: Japan 82, 83
 Plains, Ga. 214, 216-217, 216-217
 Plaisted, Ralph 302
 Planets: *Voyager's Historic View of*

Earth and Moon, July, 53
 Plankton 373, 377
 Plate tectonics: Dinosaur extinction theory 182, 184
Plateosaurus (dinosaur) 155
 Player, Gary 227
 Playtank 383
 Plaza Abajo, Chimayo, N. Mex. 416, 423
 Pleistocene Epoch: Grand Canyon animals 41, 44, fossils 17
 Pliny the Elder (Roman writer) 70
 Plutarch (Greek writer) 63
 Pluto (Greek god) 54, 70
 Poland, Kingdom of: Map 704
 Poland China (swine breed) 404
 Polar Bear Provincial Park, Ontario 782, 788
 Polar bears 273, 280, 297, 300, 304, 305; Jawbone 305; Swimming 783
 Polcyn, Hank 100
 Pollution: Aluminum plants 198; Svalbard, Norway 272, danger of 272, 276; see also Water pollution
 Polygamy: Arizona 41
 Polyporus 478
 Pond, Harvell and Arlene, and family 618-619, 623, 631
 Porcelain: Europe, first in 707, 711; Meissen, East Germany 711, 713-714; Ming 563, 568, 570, 571-573, 574, 575, 576; National Gallery of Art: Dresden exhibit 701, 706-707
 Port Moody, British Columbia 469, 472
 Port Revel, France: Supertanker simulators 119, 121
 Portman, John 217, 218, 220; Hotels designed by 218-219, 220
Portrait of Planet Earth, July, 53
 Ports: Busiest Pacific port of the Americas see Vancouver; Supertanker 110-112, 118, 123, 124, construction of 110, 118, map 108-109, proposed 117, 136; World's largest: Europort, Rotterdam, Netherlands 124
 Portsall, Brittany, France: Supertanker wreck near 108, 128-129, oil-polluted harbor 132-133
 Portugal: East India trade 562, 564
 Portuguese carracks 574; Dutch capture of 574; Naval battle 562, 563, 564-565, 566
 Pot, Shannon, Ireland 652, 656, 657, 661
 Potrero, Chimayo, N. Mex.: Shrine 418, 425, 426, 432, 432
 Potrero Trading Post, Potrero, N. Mex. 418-419
 Potters, 16th- and 17th-century Chinese 570, 574, 576; Works of 563, 568, 571-573, 574, 575, 576
 Pottery: Ancient Egyptian 813, 816; Ancient Macedonian 63, potsherds 70; Delft 570, 574; Eblaite 738, shards 739; Pre-Columbian Indians 19; see also Porcelain
 Poudevigne, M. and Mme 548

Poujol, Jacques 560
 Powell, Cory 496, 497
 Powell, John Wesley 32, 44, 51; Quoted 8-10; Writings 44
 Powell, Lake, Utah: Silting up 23
 Power lines, high-voltage: Aluminum 186, 190-191
 Pradelles, France 542
 Pre-Columbian civilization: Grand Canyon 29, 32, 38, 40, 41, relics 18-20, 39, 40, 41
 Premack, Ann and David 451
 Presque Isle, Maine: *Double Eagle II* (balloon) launch site 859, 860
 Pribram, Karl 441
 Price, Harvey 649
 Primate studies 437, 441; Project Washoe 440-441, 449, 451, 461; see also Koko, outlined
 Prince William Sound: Supertankers 118
Procompsognathus (dinosaur) 155
 Progressive Conservative Party: Canada 765, 782
 Protestant uprising: France 553, 554, 557
Protoceratops (dinosaur) 156-157, 164
 Provincial parks: Ontario, Canada 782, 788
 Prudhoe Bay, Alaska: Methane hydrate samples from 651
 Pterosaurs 167, 168
 Pueblo: Taos Pueblo, N. Mex. 430-431, 434
 Put-in-Bay, Ohio 86, 88-89, 94, 99; Aerial view 90-91, 98-99; House, steamboat-Gothic 86
 Pyramiden, Spitsbergen, Norway: Soviet community 271, 278
 Pyrrhus, King (Epirus) 63

Q

Qabus, Sultan (Oman) 824
 Qanāq, near Thule, Greenland 301, 305; Sled maker 300
 Queen Elizabeth Park, Vancouver, British Columbia 488-489
 Quick Start program: Georgia 225
 Quiver, ancient Macedonian gold 64, 65, 75
 El Quneitra, Syria 357, 360-361

R

Ra I (papyrus-reed ship) 811, 813, 826
Ra II (papyrus-reed ship) 808, 811, 813, 815, 826
 Rabanne, Paco: Coat designed by 186-187
 Rabbit infestation: South Island, New Zealand 259
 Rabun Gap-Nacoochee School, Ga. 242
 Railroads: Canada 469, 472, 476, Canadian 790-791, Chinese labor (1800's) 476, 485, Polar Bear Express 787, Royal Hudson

469; Djibouti 524-525; Svalbard, Norway: Abandoned locomotive 275
 Rakaihautu (legendary Maori giant) 255
 Rampart Cave, Grand Canyon: Fire damage 17
 Ranches: *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517; *New Zealand's High Country*. By Yva Momatiuk and John Eastcott. Aug., 246-264; Sangre de Cristo region, N. Mex. 419, 434, 436
 Rancho de Chimayo (restaurant): Chimayo, N. Mex. 422
 Randolph, Philip 635
 Rangers, park: *Grand Canyon: Are We Loving It to Death?* By W. E. Garrett. July, 16-51; Yellowstone National Park 838, 848, 849
 Ransom, Cathy 438
 Ras Shamrah, Syria: Excavations 341
 Rattle, baby's: Aluminum and gold 199
 Rattlesnake Hills, Wash. 611, 630-631
 Rau, Violet 627, 630
 Ray, Dixy Lee 614
 Rays, manta 373, 376
 Raytheon Company: Metal separator 208
 Recycling: Aluminum 189, 193, 203-204, 208, 208, 209, 211; Bronze 204; Copper 204; Garbage 208, 208, 209, 211; Lead 204; Manure 651
 Red Sea, and region: *Flashlight Fish of the Red Sea (Photoblepharon)*. By Eugenie Clark. Nov., 719-728; see also Djibouti
 Redgrave, Sir Michael 251
 Redonda Rock (island), Galapagos Islands 376-377
 Redwall Cavern, Grand Canyon, Ariz. 45, 46-47
 Ree, Lough, Ireland 665, 667
 Reed houses: Iraq 809
 Reed ships 808, 811, 813, 815, 826
 see also Tigris, outlined
 Reeds (bardi) 815, 823, 825; Harvesting 808, 815
 Refugees: Ogaden-war refugees: Djibouti 528-529; Palestinian: Syria 341, 342-343, 343; United Empire Loyalists: Canada 773
Regal Treasures From a Macedonian Tomb. By Manolis Andronicos. July, 55-77
 Regalado, Alfredo and Manuela, and family 611
 Reichel, Herta 706-707
 Reindeer: Svalbard, Norway 272, 273, 283
 Religions see Islam; Penitentes (sect); Shintoism
 "Requiem" (Stevenson): Quoted 535; Tombstone inscription 561
 Rescue: *Amoco Cadiz* crew 127
 Resource-recovery plant: Ames, Iowa 209, 211

- Restaurants, ethnic: Vancouver, British Columbia 483, 484, 487
 Reuther, Ronald 441, 449
 Reynolds, David P. 203, 204
 Reynolds Aluminum: Guyana 201; Recycling 204, 208
 Rhea, Bart 436
 Rhoades, Lisa, and niece 509
 Rhomaios, Konstantine A. 63
 Rice, Bob 864, 865
 Rice growing: *Day of the Rice God* (festival in Japan). By H. Edward Kim. July, 78-85
 Richard I, King (England): Crusade 343
 Richard, Henri 555
 Rickard, Andrew 782, 784, 787
 Rickman, Frank 233, 242, 244
 Ricqlès, Armand de 176
 Riddle, John 222
 Rideau Canal, Ontario 765, 768; Ice skaters 767, 768
 Riesling grapes 94
 Riffey, John 16, 23-24, 26
 Riffey, Meribeth 16
 Rio Grande, N. Mex. 418
 River runners, professional: Grand Canyon 22, 23, 24, 44, 46, 47, 49, conservationists 44, 46, park cleanup 46
 Rivers and river trips *see* Colorado River; Euphrates; Shannon, River; Tigris River
 Roca, Casimir 424, 426, 430-431, 432
 Rock paintings: Grand Canyon, Ariz. 18-19
 Rock strata: Fossil dating 644
 Rocky Mountains, Canada-U.S.: Natural gas: Sandstone 632, 637, 645, 648-649; New Mexico: Range 418-419
 Rodeos: New Mexico 428
 Rogers, Lesley 151
 Rogers, Martin, photographer: *Giants That Move the World's Oil: Supertankers*. July, 102-124; *Norway's Strategic Arctic Islands* (Svalbard). Aug., 267-283; *Superspill: Black Day for Brittany*. July, 124-135
 Roman Catholicism: Penitente sect 418, 420, 425, 430, 431
 Roosevelt, Franklin D. 229
 Roosevelt, Theodore 29; Quoted 2, 18
 Roscoff, France: Oil pollution 130, battle against 130
 Rosenstein, Howard 728
 Rosner, Daniel 176
 Ross, Ireland: Cottage 678-679
 Roth, Elsie 510
 Roth ranch, Cherry County, Nebr. 510-511
 Rotterdam, Netherlands: Shipyards 121; Supertanker port 123, 124
 Round House Bar, Put-in-Bay, Ohio 88
 Roundups, cattle: Nebraska 493, 500-501, 510-511; South Island, New Zealand 254
 Rousakis, John 244
 Rowley, Jim and Fiona 247-249, 257, 258, 264; Family 248-249, 256, 264
 Rowley, Tom and Adrienne, and family 249, 256, 264
 Royal Hudson (steam locomotive) 469
 Royal Ontario Museum, Toronto, Ontario: Dinosaur exhibit 152-154
 Roycroft, Noel 669
 Royo, Josep: Tapestry woven by 695
 Rudolph, Roger and Nancy 848
 Rukn ad-Din, Damascus, Syria 330-331
 Rumbaugh, Duane 451
 Rural-urban migration: Georgia 229, 231, 233
 Russell, Dale 182
 Russell, Loris 178, 182, 184
 Russell, Marjorie 624
- S**
- Saadé, Gabriel 327
 Saarinen, Eero: Buildings designed by 390, 391
 Saarinen, Eliel: Building designed by 385
 Sacred Mosque, Mecca, Saudi Arabia 584, 584, 586, 588-589, 590-591, 606-607, cover; Enlarging of 599; Gates 584, 590; Interior 596-597; Shrines: Zamzam, Well of 585, 588, 597, 607, 607; *see also* Kaaba, outlined
 Sacrifices: Animal: Bible 600, Arab workers' 810, 815, Koran 589, Muslim pilgrims' 585, 588, 601, of pigs 405; Human, attempted 589, 600
 Safa (hill), Mecca, Saudi Arabia 585, 588, 597
 Safar, Fuad 813
 Sagebrush: Yakima Valley desert, Wash. 609, 610, 630-631
 Sailing vessels: Aluminum 186, 202-203; Thistle-class boats 96; *see also* Tigris; Witte Leeuw
 Sailing With the Supertankers. By Noel Grove. July, 102-124
 St. Germain de Calberte, France: Camisards 560
 St. Helena (island), South Atlantic Ocean: *The Sunken Treasure of St. Helena*. By Robert Sténuit. Oct., 562-576
 St. Jean-Baptiste Day: Vankleek Hill, Ontario 794-795
 St. Jean du Gard, France 535, 538, 560, 561; Café 559; Museums 553, 561
 St. Lawrence River, Canada-U.S. 765
 St. Lawrence Seaway, Canada-U.S. 768
 St. Martin de Fugères, France 540-541
 St. Pierre, Col de, Cévennes Mountains, France 535, 538, 560
 Saladin, Sultan (Egypt and Syria): Army 344; Son of 358
 Salmon 674; Fishing: Ireland 669, 672, 674, 676, Vancouver, British Columbia 489, Yakima River 628-629
 Salt lake: Lake Assal, Djibouti 524
 Salvage, underwater *see* Witte Leeuw
 Samis, Jim 651
 Samoa Islands, Pacific Ocean: R. L. Stevenson 561
 Sampans: Strait of Malacca 103, 104, 124
 San Francisco Zoo 440, 441; Children's Zoo 449
 San Geronimo Mission, Taos Pueblo, N. Mex. 430-431
 San Miguel Mission, Santa Fe, N. Mex. 433
 Sand Hills (region), Nebr.: *Land of Long Sunsets: Nebraska's Sand Hills*. By John Madson. Oct., 493-517
 Beef production 498, 517; Economics of 507-508
 Dune system, characteristics of 493, 494-495, 499, 508, 510, 517; Altitudes 508
 Education: Quality of 497, 507, 508; Schools 496, 507, 509, School 100 495-497
 Farming attempts *see* Homesteaders, below
 Formation of 499, 508
 Grass cover 493, 494-497, 499, 504, 508, 511, 514, 517
 Highways and roads 493, 517
 Homesteaders (pre-1910) 512, 516-517; War with ranchers 512, 516
 Lakes 499, 504
 Map 498
 People 499, 505, 507, 510; Children, self-reliant 507; Retirees 507; Youth 506-507, 507
 Precipitation 499
 Ranches: Map 498; *see also* Abbott ranch; Forney ranch; Lord ranch; Roth ranch
 Settlement 508, 510, 511, 512, 516
 Size 498, 499
 Tourists, interests for 517
 Water reserves 493, 498, 499
 Wetlands 499; Man-made 508
 Wildlife 499, 504, 508; Refuges 512
 Sanders, Howard 120
 Sandstone: Grand Canyon strata 43, 45; Natural-gas reserves 632, 634, 635, 648, located 645-647; *see also* "tight sands"
 Sandsvalen (freighter) 278-279, 281
 Sangre de Cristo region, N. Mex.: *New Mexico's Mountains of Mystery*. By Robert Laxalt. Sept., 416-436
 Area 420
 Indians 431, 431, 434
 Land grants 419, 422, 434, 436
 Map 424-425
 Name origin 418, 425

- Population 420
 Poverty 422, 426
 Religion: Christmas ritual 422, 423; Penitente sect 418, 420, 430-432; Shrine 419, 425, 426, 432
 Schools 432, 434
 Settlers 418, 419, 421, 423, 425
 Spanish dialect 416, 418, 419, 425
 Spanish heritage 416, 425, 434
 Santa Fe, N. Mex. 416, 419-420, 425; Church 433; Fiesta 431, 434
 Santuario de Chimayo (shrine), Chimayo, N. Mex. 419, 425, 426, 432; Crucifix 425, 426, 432
 Sarcophagi, ancient Macedonian 66-67, 72, 75, 76
 Sargent, John Singer: Painting by 561
 Sargon, King (Akkad) 741, 748
 "Satan's stoning points," Mina, Saudi Arabia 585, 588, 599, 600, 601
 Satellite communications: Colorado River 23; North Pole expedition 297, 316, 322, 324
 Saturn: Exploration of 53
 Saudi Arabia: Founding (1932) 591; *Pilgrimage to Mecca*. By Muhammad Abdul-Rauf. Nov., 581-607
 Saunders, Ray 475, 477
 Savannah, Ga. 215, 239-241, 240-245; Mayor 244
 Sawyer, G. M. ("Morie") 505, 516
 Saxon-knight exhibit: National Gallery of Art 700, 701
 Saxony, Duchy of: Map 704; Nobility: Weapons 710-711; Protestantism 713; Rulers 702, 703, 709-710, armor of 703, see also Augustus II, Augustus III
 Saxony (region), East Germany: *Treasures of Dresden*. By John L. Eliot. Nov., 702-717
 Scanlan, Michael 672, 674, 679
 Scatterly Island, Ireland 674
 Scheib, Joe and Joy 264
 Schill, Gerhard 709
 Schneider, Sonny 95
 Schools: Columbus, Ind. 386, 388-389; One-room schoolhouses: Sand Hills, Nebr. 495-497, 496, 507; Three-room log school: Ontario 787-788
 Schreier, Peter 714
 Schulz, Joachim 711
 Schulz, Matthias, and son 717
 Schwartz, Douglas 41
 Schwoebel, Rich 864, 874
 Scott, Bruce 255, 258
 Scott, David W. 694
 Scribes: Eblaite civilization 745, 748, 749-750, 751, students 748, 749
 Sculpture: Macedonian: Ivory portraits 56, 62, 75; Middle Eastern 735, 738, 744, 754, 756; Columbus, Ind. 382, 386, 393; see also National Gallery of Art
 Sea anemones 377
 Sea Bus ferry: Vancouver, British Columbia 466-467
 Sea lions 367-369, 372, 373, 376, 379, 380; Pups 378
 Seabirds: Oil-spill victims 134, 135; Svalbard, Norway 282, 282-283
 Seaborg, Glenn T. 211
 Seafaring, ancient: *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827
 Seafood-processing plant: Yakima Indians 625, 627, 630
 Seals (stamps), ancient 754, 806, 816, 823, 825
 Seals, fur 373, 380
 Sedimentation: Grand Canyon, Ariz. 40, 45
Seeking the Tomb of Philip of Macedon. By Manolis Andronicos. July, 55-77
 Seismic prospecting 643, 643-644; Methane hydrates 647, 650, 651
 Semitic cultures, early: *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759
 Semper's Opera House, Dresden, East Germany 709
 Senior Citizens Kitchen Band: Columbus, Ind. 384
 Senkevitch, Yuri 806, 815, 816, 820
Sepia (tanker) 118
 Seton, Ernest Thompson 837
 Seven Years' War: Dresden, Germany 702
 Seventy Islands Preserve, Palau Islands 140-141
 Shaban, Fuad 336
 Shahba, Syria 339
 Shakespeare festival: Stratford, Ontario 789
 Shale: Fossils from 644; Natural gas 632, 635, 647, 649-650, resources located 645-647
 Shannon Airport, Ireland: Duty-free shop 672
 Shannon, River, Ireland: *Where the River Shannon Flows*. By Allan C. Fisher, Jr. Nov., 652-679
 Boats and boating 653-655, 656, 657, 661, 663, 666, 667, 672, 676-677
 Castles 677; Ruins 669
 Fishing 669, 672, 674, 675, 676
 Hydroelectric power 656, 657, 661, 669, 672
 Industry 656, 657, 660, 672, 676
 Legends 652, 661, 672, 679
 Length 652, 656
 Locks 656, 657, 661, 672
 Loughs, major 658, 659, 661, 665, 666, 667
 Map 657
 Ruins 652, 657, 661, 664, 667, 668, 669, 672
 Source 652, 656, 657, 661
 Tributaries 653, 656, 661, 663, 675
 Shannon Pot, Ireland 652, 656, 657, 661
 Shaqqa, Syria 339
 Sharks 377, 380
 Sharm el Sheikh, Sinai Peninsula 727
 Sharon, Ga. 233
 Sharqi, Al Jabal ash, Lebanon-Syria 327; Malula 344-345, 348-349; Mount Hermon 326, 357
 Shatt al Arab (river), Iraq 815
 Shaw, George Bernard: Plays by 789
 Shaw, Robert 224
 Sheep and sheep raising: New Mexico 428-429, decline in 434, 436; *New Zealand's High Country*. By Yva Momatiuk and John Eastcott. Aug., 246-265; Original American breed 434; Yakima Valley, Wash. 631
 Shell Oil Company: Natural gas geopressure zones 638
 Shield, ancient Macedonian 61, 72, 73; Cover 60-61, 73
 Shilo, Moshe 722
 Shintoism: *Day of the Rice God* (festival in Japan). By H. Edward Kim. July, 78-85
 Shipbuilding: Japan 107, 113, 116, 122, construction crews 116, 122-123
 Ships see Supertankers; *Tigris*
 Shipwrecks: *Bantam 566*; see also *Amoco Cadiz*; *Witte Leeuw*
 Shoes, wooden: France 541
 Shotover River, South Island, New Zealand 264
 Shrines: Chimayo, N. Mex. 419, 425, 426, 432, 432; Moslem: Zamzam, Well of, Mecca 585, 588, 597, 607, 607, see also Kaaba, outlined
 Siberia, U.S.S.R.: Methane-hydrate deposits 650, 651
 Siegal, Fritz 200
 Sierra Club: Grand Canyon conservation 17, 25, 26, 29
 Sign languages: Chimpanzee communication 438, 440-441, 461, 462; The deaf 438, 441; Gorilla communication 437, 438, 440, 451, 456, 461, 462, "molding technique" 441, 449; Indian 431
 Sikhs: Vancouver, British Columbia 482-483
 Silbermann, Gottfried 717
 Silt: Colorado River 16, 22, 23
 Silver, ancient Macedonian 73, 73, 76
 Silver Swaddler (aluminized blanket) 188-189
 Simcoe, Lake, Ontario: Farms near 776, 778-779
 Sinclair Comparative Medicine Research Farm for the Study of Chronic Diseases and Aging, University of Missouri 412
 Single Point Mooring ports 118
 Sinyella, Wayne 29
 Sioux Indian 622
 Skate (nuclear submarine) 302
 Skid Road (district), Vancouver, British Columbia 476, 491
 Skiing: Quebec, Canada 768; Sval-

- bard, Norway 276, 278; Vancouver, British Columbia 467, chair lift 470-471; Yellowstone National Park 830, 831, 839, 848, 849, 855
- Skippers, South Island, New Zealand: Gold discovery 264
- Skyscrapers: Atlanta, Ga. 212-213; CN (Canadian National) Tower, Toronto, Ontario 762, view from 762-763; World Trade Center, New York, N. Y. 206
- Slag, nickel: Sudbury, Ontario 770-771
- Slavsk* (freighter) 814, 815-816
- Sled dogs 297; *Solo to the Pole*. By Naomi Uemura. Sept., 298-325
- Sloan, Robert 178
- Smallpox—Epiaph for a Killer?* By Donald A. Henderson. Dec., 796-805
- Asian strain 797, 800, 804
- Contagion 797, 800, 803
- Effects, long-term 801, 803
- Laboratories, virus confined to 797, 800, 804; Located 800
- Last cases: Laboratory contracted 797, 800; Natural 797, 804, 805
- Maps: Eradication (1967-1978) 800
- Surveillance-containment strategy 800, 804
- Symptoms 796, 797, 798, 805
- Vaccine: Administration of 801, 802, 803; Cowpox 798, 801; Freeze-drying 801; Storing 805
- Smith, Dave 848, 849
- Smith, David: Sculptures by 696-697
- Smith, Max 255, 263
- Smith, Ron 22, 23, 24
- "small home" (log cabin) 781
- Snowcoach (tractor) 830, 832, 849
- Snowflake (gorilla) 438
- Snowmobiles 269, 277, 287, 830, 832, 849, 856
- Soitzek, Detlef 820
- Solar system: Exploration of 53
- Solo to the Pole*. By Naomi Uemura. Sept., 298-325
- Somalia 519, 520, 521, 523; Dispute over Ogaden 520, 523, 528, 798, 804; Frontier 528-529; Smallpox eradication 797, 804
- Somalis (people) 520, 528, 532
- Sonny S.* (fishing boat): Crew 92
- Soo-Hoo, Carroll 449
- South Africa: Oil spill 108
- South Bass Island, Ohio 86, 98-99; Summer visitors 86, 97; Vineyards 92, 94; Winter shore 101; see also Put-in-Bay
- South Equatorial Current, Pacific Ocean 371
- South Island, New Zealand: *New Zealand's High Country*. By Yva Momatiuk and John Eastcott. Aug., 246-265
- Cattle 248, 251, 254, 263
- Character of people 246-247, 248, 259, 263, 264
- Colonization 249, 259, 264
- Discovery 249
- Education 251, 254
- Farms and farming 255, 259; Irrigation 255, 258, 263
- Maori 249, 251, 264; Legend 255
- Map 248-249
- Mountains 247, 249, 254, 265
- Sheep and sheep raising: Merinos 252-253, 258, 260-261, wool from 257; Mustering 252, 252-253, 258, 260-261; Shearing 251, wool 257, 264
- South Sea Islands see Palau Islands
- Southcombe, Ann 453, 465
- Southern Alps, South Island, New Zealand 247, 249, 254, 265
- Space Shuttle orbiter: Missions planned 53; Test flight 210-211
- Spacecraft see Voyager
- Spanish (people): Grand Canyon 32, 44; Sangre de Cristo region, N. Mex. 418, 419, 423, 425
- Spanish (language): Sangre de Cristo region, N. Mex. 416, 418, 419, 425
- Spitsbergen, Svalbard, Norway: Fossil footprints 170; North Pole expeditions 302; *Spitsbergen, Norway's Arctic Hot Spot*. By Gordon Young. Aug., 267-283
- Spivia, Ed 227
- Splendor of an Unknown Empire: Ebla*. By Howard La Fay. Dec., 730-759
- The Splendor of Dresden: Five Centuries of Art Collecting* (exhibit) 692, 700, 701, 706-707
- Spoke, Fred 490
- Spoleto Festival (1962): Sculptures commissioned for 696-697
- Sponge, ancient 60, 61
- Squirrels: Grand Canyon species 41, 44; Tracks in snow 839, 852
- Stamps, postage: Smallpox eradication campaign 798
- The "standing" (hajji rite) 585, 588, 595, 595
- Stanfield, James L., photographer: *Ebla: Splendor of an Unknown Empire*. Dec., 730-759; *Syria Tests a New Stability*. Sept., 326-361
- Stanford University, Calif.: Campus 452, 457; Gorilla-communication research 438, 440, 453, 462
- Stanley Park, Vancouver, British Columbia 468, 478, 479, 489
- Stanolind Oil and Gas Company: Tulsa, Okla. 639
- Starfish 374
- Starkey, Roy 23
- Startling New Look at Dinosaurs*. By John H. Ostrom. Aug., 152-185
- Steam clock: Vancouver, British Columbia 475, 477
- Steamboat-Gothic house: Put-in-Bay, Ohio 86
- Steel: Armor 702-703; Sculptures 696-697, 699
- Stegner, Wallace: Quoted 14-15
- Stegosaurus* (dinosaur) 155-156, 183; Back plates 176, 182; Infant skeleton 172; Tail spikes 182, 183
- Steinhart Aquarium, San Francisco, Calif. 728
- Sténuit, Robert 575; *The Sunken Treasure of St. Helena*. Oct., 562-576
- Stevens, Sam 241, 242
- Stevenson, Fanny Osbourne 561
- Stevenson, Robert Louis: *Travels With a Donkey—100 Years Later*. By Carolyn Bennett Patterson. Oct., 535-561
- Death 561
- Donkey trek: Distance 535, 538; Route 535; Route retraced, map of 538
- Portraits 535, 561
- Sketches by 541, 545, 553
- Works by 561; "Requiem" quoted 535, 561; see also *Travels with a Donkey in the Cévennes*
- Stevenson Centenary Committee 538
- Steveston, British Columbia 489-490
- Stewart, Edward 765
- Stitt, Merle 17, 20
- Stockton, Stan 28, 29, 31
- Store Norske Spitsbergen Kulkompani 267, 269
- Strategic Spitsbergen* (Svalbard, Norway). By Gordon Young. Aug., 267-283
- Stratford, Ontario: Shakespeare festival 789; G. B. Shaw plays 789
- Street, Daisy Mae 231, 235
- Strip mines: Jamaica 194-195, 198
- Struthiomimids: Endothermy, possible 178; Posture 174; see also *Struthiomimus*
- Struthiomimus* (dinosaur) 157, 171, 174-175; Skeleton 174
- Stump, Bob 20
- Subsurface mapping: Locations of gas and oil 644
- Sudbury, Ontario: Nickel mining 781, slag 770-771
- Suez Canal: Supertankers and 107, 108
- Sugar, James A., photographer: *The National Gallery's New Masterwork on the Mall*. Nov., 680-701
- Sugar beets: Syria 339, 346, 354
- Sugarhead, Daisy 787, 788
- Suhar, Oman: Ruins near 818, 824-825
- Suidae family (pigs) 404
- Sumanik, Ken 296
- Sumer (ancient kingdom): Civilization, world's first known 748, 812
- Sumerians 748; Mathematics 755; Seafarers: *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827; Writing 734, 748, 749
- Summer Beaver (village), Ontario 787, 788

Sun: Polar orbiter planned 53
 Sunburst symbol, ancient Macedonian 55, 67, 75, 76
The Sunken Treasure of St. Helena (Witte Leeuw). By Robert Sté-nuit. Oct., 562-576
 Sunshine (fishing boat) 489
 "super well" (natural gas) 641, 650
 Supernovas: Dinosaur-extinction theory 182, 185
 "Supersaurus" 167, 171, 172, 176; Weight 171, 176
 Supershops *see* Supertankers
Superspill: Black Day for Brittany. By Martin Rogers. July, 124-135
 Supertankers 1, 812, 818, 824, 825
Giants That Move the World's Oil: Supershops. By Noel Grove. July, 102-124
 Amenities 107, 109, 117
 Construction 107, 113, 116, 122; Crews 116, 122-123
 Crews 106, 107, 109, 117, 123; Costs 109; Sizes 107
 Cut-away diagram 113-115
 Deadweight tons 104, 107, 110, 113, 114, 118, 120, 123
 Drafts 104, 109, 118, 123
 Future of 121, 123
 Largest 107, 123-124
 Navigational aids 103, 104, 106, 117
 Number of 104
 Oil spills 107, 117, 120-121; Map 108-109
 Owners 107, 108, 110
 Ports 110-112, 118, 123, 124; Construction of 110, 118; Map 108-109
 Registration 107, 109; Map 108-109
 Routes: Map 108-109
 Safety devices 117, 121, 123-124
 Simulators 118-119, 121
 Sizes 103-104, 107, 113-115, 123 *see also* Deadweight tons, *above*
 Ports, proposed: Palau Islands 117, 136, 137, 150
see also Amoco Cadiz
 Suppes, Patrick 462
 Suqs: Syria 333, 334, 335, 340
 Suzuki, Toru 820
 Svalbard, Norway: *Norway's Strategic Arctic Islands*. By Gordon Young. Aug., 267-283
 Area 267, 269
 Barometric pressure 269, 283
 Coal 267, 268; Mines 268, 269, 272, explosions 274, 283; Processing plant 272
 Consul, Soviet 278
 Governor *see* Eldring, Leif
 History 267, 268, 269, 271, 272, 273, 283
 Map 268
 Midnight sun 276-277
 Name origin 267
 Natural resources 267, 272-273, 274, 282 *see also* Coal, *above*

Norwegian sovereignty 268, 271, 272, 274
 Recreation 272, 277-278, 278-279; Sports 276, 278
 Soviets in 268, 271, 271, 272, 273, 278, 278-279
 Strategic location 267, 268, 269, 273-274, 276, 282
 Tourism 278
 Transportation 269, 269, 271, 272-273, 277
 Treaty of Svalbard (1925) 268, 272, 274, 276
 Wildlife 272, 273, 278, 279, 280, 281, 282-283, 282-283
 Winter darkness 266-267, 267, 269, 272
 Sveagruva, Spitsbergen, Norway 269
 Swapp, Preston 42, 44
 Swimming pools: Supertankers 107, 109
 Swine breeds 404
 Swords, ancient Macedonian 70, 72
 Symbiosis: *Photoblepharon* and light-emitting bacteria 719, 720, 722, 726
Syria Tests a New Stability. By Howard La Fay. Sept., 326-361
 Ancient 329, 330, 333, 337, 339, 340, 341, 344, 349, 350-351, 353, 358 *see also* Ebla
 Arab-Israeli conflict 326, 327, 341, 343, 357, 360; Effects of 348, 357, 360; Palestinian refugees 341, 342-343, 343
 Archeological sites 337, 340, 341, 350-351, 353
 Bazaars 333, 334, 335, 340
 Capital *see* Damascus
 Christians 329, 335, 341, 343, 344, 348-349
 Desert 353, 354-355
 Education 329, 329, 333, 335-336; Schoolchildren 328, 345
 Facts and figures 332
 Farms and farming 327, 338-339, 341, 348-349, 352, 353; Granary 336-337; *see also* Irrigation, *below*
 Flag 332
 History 326, 329, 330, 333, 339, 341, 343, 344-345, 346, 349, 350-351, 353; Early civilizations, site of 327, 358 *see also* Archeological sites, *above*; French rule 340; Republic 326, 327; *see also* Arab-Israeli conflict, *above*
 Houses, beehive 336-337
 Irrigation 327, 332, 338-339, 346, 354
 Map 332
 President *see* al-Assad, Hafez
 Religion *see* Christians, *above*; Islam
 Soviet aid 327, 329, 333, 338, 341, 353
 Tribes 332, 333; Bedouin 353, 354-355; Druzes 337, 339-340, 340; Kurds 339
 Women 329, 329, 333, 336-337,

339, 347, 352, 353, 355; Bride price 340

T

T-2 tankers: Deadweight tons 104, 115; Diagram 114-115
 Ta Tchen Tcheung 485
 Taboos: Eating of pork 405
 Talone, Ed 649
 Tampa, Fla.: Aluminum recycling center near 208
 Tank farm: Kiire, Japan 110-112
 Tankers *see* Supertankers
 Taos, N. Mex. 420, 434; Art colony 420, 431; Sheep raising near 428-429
 Taos Pueblo, N. Mex. 430-431, 434
Tarbosaurus (dinosaur) 156-157
 Tarn River, France 553, 558-559; Stevenson quoted on 558
 Tartus, Syria 341; Cathedral 345-346
 Tasman, Abel 249
 Tavernier, Michel 566
tawaf (hajj rite) 584, 585, 588, 592, 597, 606-607
 Taylor, Jim 436
 Tell Mardikh (town), Syria 741; Beehive houses 336-337
 Tell Mardikh excavation 340; *Ebla: Splendor of an Unknown Empire*. By Howard La Fay. Dec., 730-759
 Temple, Jerry 209, 211
Tenacious (yacht) 202-203
Tenontosaurus (dinosaur) 162
 Terrell, Vera and Beecher 29, 29
 Tesch, Harold 399
 Texas: Fossil footprints, dinosaur 162
 Texas drovers: Sand Hills, Nebr., settlement 511, 512
 Textile-printing plant: Macon, Ga. 224
 Thanksgiving Day: Canada 773
 Al Thawra, Syria 339
 Thecodonts 166
 Thedford, Nebr.: High school: Student fiddler 509
 Therapsids 166
 Thermal areas *see* Yellowstone National Park
 Theropods: *A New Look at Dinosaurs*. By John H. Ostrom. Aug., 152-185
 Thomond Bridge, Limerick, Ireland 676
 Thompson, Carl 176
 Thompson, Jay 428
 Thompson, Ken 118, 120
 Thomson, Richard M. 773
Thor Heyerdahl Sails in the Wake of Sumerian Voyagers. By Thor Heyerdahl. Dec., 806-827
 Thunder Bay (city), Ontario 788; Grain elevators 788-791; Port 788, 788-789
 Tiber Creek-bed, Washington, D. C. 700
 Tibni, Syria: Cotton farming near 352

- Tierra Amarilla, N. Mex.: 1967 shoot-out 422
- Tiffany's (store), New York, N. Y.: Aluminum capstone displayed 196, 207
- Tifton, Ga. 215; Crops 239
- "tight sands", western: Natural gas 632, 645, 648; Fracturing 645, 648, diagram 636-637; Located 645-647
- Tigre Lagoon, La.: Natural gas: Geopressure test well 635
- Tigris* (reed ship): *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827
- Burning of 826, 827
- Construction of 808, 810-811, 815
- Crew 812, 815, 820, 821, 826-827
- Dedication of 810
- Draft 818
- End of voyage 813, 826, 826-827
- Hazards 806, 812, 814, 815; Oil tankers 812, 818, 824, 825
- Hull, twin 806, 807, 810-811, 814, 815, 825
- Length of voyage 813, 815, 826
- Repairs 814
- Route: Map 812-813
- Sails 807, 815, 824
- Tigris River, Iraq-Turkey 759, 815; Ancient civilizations 735, 755, 806, 812; Confluence with the Euphrates 755, 806, 810-811, 812, 815
- Tijerina, Reies 422
- Tikkoo, Ravi 110
- Tilmissan, Adeb 584
- Timber: British Columbia 468, 472-473, 478, 487; Georgia 243; Yakima Indian Nation, Wash. 618, 627
- Timmins, Ontario: Mines 781
- Tinguely, Jean: Sculpture by 382
- Tipton, John 390
- Tocher, Jim 648
- Tombs: Tomb of Jesus, apocryphal 339; *see also* Macedonian tomb
- Toppenish, Wash. 626, 627
- Toronto, Ontario: The arts 772, 776; Immigrants 762, 773; Population 764, 772; Tower 762, view from 762-763
- Toronto Blue Jays (professional baseball team) 776
- Torosauros* (dinosaur) 157
- Torrey Canyon (supertanker): Oil spill 108, 121, 124, 134
- Total Victory Over Smallpox?* By Donald A. Henderson. Dec., 796-805
- Totus, Watson 627
- Tower, world's tallest free-standing: CN (Canadian National) Tower, Toronto, Ontario 762; View from 762-763
- Tower Gallery, National Gallery of Art, Washington, D. C.: Matisse cutouts 692-693
- Tracks, animal: Fossil footprints 162, 170; In snow 839, 852, 853
- Trade routes: Ancient Middle East 731, 734, 737, 759, *Tigris Sails Into the Past*. By Thor Heyerdahl. Dec., 806-827; East India 562, 564, 566, 576
- Trampas, N. Mex. 422
- Transatlantic balloon flights: Attempts (1873-1978) 864, 870-871; Successful *see* *Double Eagle II*
- Transco Companies Inc.: Houston, Tex. 639
- Transcontinental Gas Pipe Line Corporation: Louisiana: Pipelines 640, 641, processing plant 641
- Transmission tower, aluminum: Installation by helicopter 190
- Trapping, live: Bears 838
- Trappist monasteries: France 547-548, monks 549, 551, wine making 538, 548, 550; Number of 548
- Travels With a Donkey—100 Years Later*. By Carolyn Bennett Patterson. Oct., 535-561
- Travels with a Donkey in the Cévennes* (Stevenson) 535; Frontispiece 534; Quoted 535-561; Trip statistics 535, 538
- Treasure, sunken *see* *Witte Leeuw Treasures of Dresden*. By John L. Eliot. Nov., 702-717
- Treaty Number 9 (1905): Ontario Indians 782
- Treaty of Svalbard 268, 272, 274, 276
- Trees: Cedars, western red 479; Chestnut 554-555; Cottonwood 29; Hemlock 487, polyporus on 478; Mini-trees 777; Ponderosa pine 41, 44
- "Tres Horas" (crucifixion reenactment) 432
- Triceratops* (dinosaur) 157, 163, 184-185
- Trillmich, Fritz 373
- Trolleys, electric: Yakima Valley, Wash. 617, conductor and riders 616
- Truchas, N. Mex. 420-421, 422, 431
- Trudeau, Pierre Elliott 768, 773, 794
- Truffle hunting: Dogs 408, 410; Pigs 405, 408, 410
- Trujillo, Evonne 431
- Tsavidaroglou, Spyros, photographer: *Regal Treasures From a Macedonian Tomb*. July, 55-77
- Tumbleton, Myron E. (Mike) 412, 413, 414
- Tundra: Ontario, Canada 764, 784-785; Svalbard, Norway 277, 282-283; Wheeler Peak, N. Mex. 419
- Turc, Mme 555
- Turner, Ted 203
- Turner, Thomas 208
- Twizel, South Island, New Zealand 255, 263
- Tyrannosaurus* (dinosaur) 156-157, 158, 162-163, *cover*; Hunting method 162; Size 162, 171
- ULCC's *see* Ultra Large Crude Carriers
- Udall, Morris 25
- Uemura, Naomi 297, 297, *cover*; *Solo to the Pole*. Sept., 298-325
- Ugarit (ancient city): Alphabet 341, 754; Artwork 754; Eblaite influence 740, 749, 754; Excavations of 341, 741, 749, 754; Literature 754
- Ultra Large Crude Carriers (ULCC's) 107, 111-112, 117, 118, 122-123, 123-124; Defined 107; Diagram 113-115; Draft 118, 123
- Umayyad Mosque, Damascus, Syria 331, 335
- Uncompahgre Plateau, Colo.: Fossil sites 167, 171, 177
- Undersea Wonders of the Galapagos*. By Gerard Wellington. Sept., 363-381
- Union Camp: Georgia: World's largest paper mill 243
- Union of Soviet Socialist Republics: Foreign relations: Democratic Yemen 520, Ethiopia 520, Somalia 520, Syria 327, 329, 333, 338, 341, 353, *see also* Svalbard; Methane-hydrate deposits 650, methane recovery 651; Smallpox: Fight against 803, laboratory 800
- United Arab Republic 327
- United Nations: Smallpox-eradication campaign: Medal commemorating 797, postage stamp 798
- United Nations Trust Territory, Pacific Ocean *see* Palau Islands
- United States: Aluminum production 196, 197; Foreign relations: Canada 773, Israel 326; Hops production 618; Hydroelectricity 191, 196-197, first large-scale plant 196; Imports: Bauxite 200-201, oil 107, 117-118; Indian affairs 29, 35, 624-625; *Natural Gas: The Search Goes On*. By Bryan Hodgson. Nov., 632-651; Oil spill (1976) 1, 108, 120-121; Smallpox, fight against 803; Supertanker port, construction of 110, 118; Supertanker registration 107, 109, number 108; *see also* National Park Service, and U.S. entries, following
- U. S. Bureau of Mines: Aluminum research 151, 195, 201; Assistant director 200-201; Coal-seam degassing 649; Recycling 208
- U. S. Bureau of Reclamation 625
- U. S. Capitol, Washington, D. C. 684, 698
- U. S. Coast Guard: Valdez Narrows, Alaska 118
- U. S. Department of Energy: Natural gas: Geopressure test wells

635, **639**, proposed wells 639;
Technology center 649, 650
U. S. Department of Labor: Em-
ployment center funded by
618
U. S. Forest Service 42, 434, 436
U. S. Geological Survey: Natural-
gas studies 635, 650; Satellite
communications 23
U. S. Immigration and Naturaliza-
tion Service: Mexican immi-
grants, illegal 623
University of British Columbia
Museum of Anthropology **481**
University of California at Los An-
geles: *Photoblepharon* studies
726
University of Missouri: Sinclair
Comparative Medicine and Re-
search Farm for the Study of
Chronic Diseases and Aging
412
Upper Canada Village (recon-
struction), near Morrisburg, On-
tario 789
Ur of the Chaldees, Mesopotamia
736, 741, 755, 759
Uranium: Ontario, Canada 781
Uranus: Exploration of 53
Urban renewal: Atlanta, Ga. **212-213**, 214, 217, **218-219**, 220, 221, 222; Savannah, Ga. 239, 241, **244-245**; Vancouver, British Co-
lumbia 480, **482-483**
Urbanization: Ancient Middle
East 735, 740, 741, 743
Usakowsky, Igor 816
Utah: Aluminum ores 195, 201

V

VLCC's *see* Very Large Crude
Carriers
Vaccines *see* Smallpox
Vaea, Mont, Western Samoa:
R. L. Stevenson's grave 561
Valdez, Facundo 434
Valdez Narrows, Alaska: Super-
tankers in 1, **105**, 118, simula-
tion 121
Valentine, and area, Nebr. **494-495**, 499, 505, **512-513**, **516-517**, 517
Valves, heart: "bioplasticized"
406, 411
Van de Putte-Latham, Mme Léon
560-561
Van Horn, John 505
Van Horne, William Cornelius
469, 472
Van Valen, Leigh 178
Van Winkle, Jim 499
Vancouver, George 468, 472
Vancouver, British Columbia,
Canada: *Dream On, Vancouver*.
By Mike Edwards. Oct., 467-
491
Area 482
Climate 467, 468-469, 471, 480
Commuter transit 468, **490-491**;
Ferries **466-467**, 468; Float
planes 468, 474, 487

Economic boom (1950's and
'60's) 480
Ethnic diversity 478, 480, 482-
483, 484, 485, **485**, 489-490;
Discrimination 483; Restau-
rants 483, **484**, 487
Fishing industry 489
Forest-products industry 468,
472-473, 478, 487
Map 468
Mayor *see* Volrich, Jack
Parks 468, **478**, **479**, **488-489**,
489
Population 468, 476; Decreasing
482
Port, busiest American Pacific
466-467, 467-468, **470-471**,
472, 490
Railroad terminus 469, 472, 476;
Steam locomotive **469**
Renovation 475-476, **477**, 480,
482-483
Skiing 467; Chair lift **470-471**
Steam clock 475, 477
Symphony orchestra 490-491
Urban planning 480, 482
Vankleek Hill, Ontario: Nun **795**
Varming, Henrik 269
Vase paintings, Greek: Ritual
slaughter **405**
Vegetable garden, moss-support-
ed 781
Velociraptor (dinosaur) **156**, 164
Venol (supertanker): Oil spill 108
Venpet (supertanker): Oil spill 108
Venus: Exploration of 53
Vergina, Greece: *Regal Treasures*
From a Macedonian Tomb. By
Manolis Andronicos. July, 55-77
Vermeer, Jan 702; Painting by **715**
Vermejo Park, N. Mex. 436; Ro-
deo **428**
Verolme Shipyards, Rotterdam,
Netherlands 121
Very Large Crude Carriers
(VLCC's) 103-104, 107, 108,
109, 117, 120, 124; Defined 107;
Draft 104, 118; Simulators **119**,
121
Vesey, Arthur 789
Victoria, Queen (Great Britain):
Ottawa, founding of 765, 768
Victory, Hotel, South Bass Island,
Ohio 90
Vigil, José Antonio 423
Vigil, Norberto 423
Vigil family 422-423
Viki (chimpanzee) 441
Villanueva, N. Mex. 426, **427**
Vineyards: Bass Islands, Ohio 92,
94, **94-95**
Violins: Aluminum **200**; Violin
maker 667, **673**
Volcanism: Grand Canyon 23, 49
Volrich, Jack 480, 482
Voltri sculptures **696-697**
Von Eckardt, Wolf 685
Voyager spacecraft: Voyager 1:
Voyager's Historic View of Earth
and Moon. July, 53; Voyager 2:
Flybys 53
Vulcans Throne, Grand Canyon,
Ariz. 23, 48

W

Wagner, Tommy **231**
Waitaki Catchment Commission,
South Island, New Zealand 259
al-Walid II, Caliph (Damascus)
335
Waller, Michael 638
Walrus 272, 278, 279, 281
Walters, Jim 27, 28, **30**
Wan Li, Emperor (China) 574
War of 1812: Battle of Lake Erie
86, 89, 98; Niagara River valley,
Canada-U. S. 792-793
Wardwell, Ed 569
Warfare: Ancients, as practiced by
732-733, 740, 741, 755; Gallic
63-64, 70; Macedonian 62, 75;
see also Crusaders
Warm Springs, Ga. 229
Warthog **404**
Washburn, Barbara **36**
Washburn, Bradford **36**, 37
Washington: *Washington's Yakima*
Valley. By Mark Miller. Nov.,
609-631
Washington, D. C.: Suburb **401**;
see also National Gallery of Art
Washington Building Congress:
Awards 700
Washington Monument, Washing-
ton, D. C.: Aluminum capstone
193, 196, **207**
Washoe (chimpanzee) 440-441,
449, 451, 461
Water pollution: Lake Erie 90, 92,
95, 99; Mercury: Hudson Bay
area lakes 784; *see also* Oil spills
Water reserves: Georgia 215; Sand
Hills, Nebr. 493, 498, 499
Water-rights legislation: Indian
lands 625
Water Street, Vancouver, British
Columbia 475, **477**
Watson, Tom **226**
Wattenberg gas field, Colo. 648;
Sand fracturing **637**
Weapons: Ancient Macedonian
57, 63, 72; Saxon firearms **710-711**
Weaver, Kenneth F. 577
Weaving, John **653**, 655
Wedding party: Niagara Falls, On-
tario **760-761**
Weems, Bill, photographer: *Geor-
gia, Unlimited*. Aug., 212-245
Weese, Harry: Church designed
by **390**
Welder: Supertanker construc-
tion **116**
Weller, Mr. and Mrs. Frank, Jr.
398
Wellington, Gerard **370**; *Undersea*
Wonders of the Galapagos. Sept.,
363-381
Wellman, Walter 268
Wells, natural-gas *see* Natural gas
Wenman (island), Galapagos Is-
lands 379-380
West African nations: Measles-
smallpox program 798
Westcott, Bridget **769**

- Wetlands: Georgia **228-229**, 235, 239; Nebraska 499, man-made 508
- Whales: Galapagos Islands 373
- Wheat: Loading of freighter **788-789**
- Wheeler Peak, N. Mex. 418-419
- Where the River Shannon Flows. By Allan C. Fisher, Jr. Nov., 652-679
- White Swan, Wash.: Mint distillery 617
- White Swan Lumber Company: Yakima Indian Reservation, Wash. **618**
- White-water trips: Grand Canyon **5-6**, 45, **49**, 51; Petawawa River, Ontario **788**
- Whitewater Lake, Ontario: Settler **780**, **781**
- Whitlow, Vicki **220**
- Wieland, Denton 635
- Wild pigs 400, 403, **404**, 405, 412
- Wilderness area, proposed: Grand Canyon National Park, Ariz. 35
- Wildlife: Sand Hills, Nebr. 499, **504**, 508; see also Grand Canyon; Mountain goats; Svalbard, Norway; Yellowstone National Park
- Wildlife preserves and refuges: Sand Hills, Nebr. 512, longhorn cattle auction **512-513**; Svalbard, Norway 272, 273, 282
- Wilds, Clara **384**
- Wiley, W. C. ("Doc") 864, 874
- Williams, Elizabeth 627
- Williams, Sinclair 782
- Williamson, Ron and Jennifer 251, 254; Family 251, 254, 255
- Wiltshire, Julian 540
- Wimer, Jack **616**, **617**
- Windmill **510**
- Wine making: Bass Islands, Ohio 90, 92, 94-95; Trappist monks: France 538, 548, 550
- Winterkeeping in Yellowstone. By R. Steven Fuller. Dec., 829-857
- Bear assaults 832, 835, 838, 855; Protection from 832, **835**
- Christmas season 849
- Education of children 832, 855
- Housing **830**, 832, **854**
- Isolation 829, 832
- Mail service 849
- Recreation **834**, **835**, **842-843**, **848**, **855**
- Snow-cornice removal **828-829**, 832, 848
- Supply storage 832
- Winterkill, animal: Yellowstone National Park 839, 846, 856
- Witte Leeuw (Dutch East Indian): The Sunken Treasure of St. Helena. By Robert Sténuit. Oct., 562-576
- Battle, naval 562, 563, **564-565**, 566, 570, 576
- Cannons **567**, 569, 570, 574, 576
- Cargo **566**, **568**, **569**, 574, 576; Diamonds 563, 566, 568, 574, 576; Pottery 563, 576, Ming porcelain **563**, 568, 570, **571-573**, 574, **575**, 576; Spices 563, 566, 568, 570, pepper 568, 570, 574
- Hull remnants **568-569**, 570
- Route 562, 576; Map 564; Return 564, 566, 576
- Search for 564, 566, 575, 576; Divers 566, **567**, **568**, 569, 570, 574; Equipment **567**, **568**, 569-570, 574, 576
- Stern: Explosion of **564**, 568, 576; Missing 574, 576
- Wittmer, Rolf 379
- Wolf Fork Valley, Ga. **236-237**
- Women: Deckhand **769**; Fisherman 489; Governor **614**; Mayor **614**; Pilot **619**; Primate studies 437; Ranch hands **510**, **511**
- Wood carvings: Eblaite **735**; Indian **481**
- Woodcock, John and Ellen 787
- Wooden shoes: France **541**
- Woodruff, Robert W. **225**
- Woods Hole Oceanographic Institution: Oil-spill research 120-121
- Woolfitt, Adam, photographer: Where the River Shannon Flows. Nov., 652-679
- Working Cowboys Rodeo: Vermejo Park, N. Mex. **428**
- World Health Organization (WHO): Diseases eradicated 603, smallpox campaign 797, 798, 803, 804, 805; Headquarters 798, located 800
- World Trade Center, New York, N. Y. **206**
- World War II: Dresden, bombing of 702, 704, 706, 717, death toll 709; France 560; Greece: Effects on archeological sites 63; Svalbard, Norway 273; Tankers 115; U-boats, German 186, 200; Vancouver, British Columbia: Japanese-Canadians, internment of 489-490
- World's Worst Spill (oil). By Martin Rogers. July, 124-135
- Wreaths, golden: Ancient Macedonian **68-69**, 75
- Wright Flyer: Aluminum use 211
- Writing: Ebla: Splendor of an Unknown Empire. By Howard La Fay. Dec., 730-759
- Wyeth Laboratories: Smallpox-vaccination needle **802**, 803
- Wyoming: Aluminum ores 195, 201; Tight-sand gas deposits 648
- Y
- Yachts, aluminum 186, **202-203**, 203
- Yakima, Wash. **614-615**; Agriculture-related business 610, 611, 614, 615; Mayor **614**; Population 610, 614
- Yakima County, Wash.: Agricultural production, place in 610
- Yakima Indian Nation, and Reservation, Wash.: Washington's Yakima Valley. By Mark Miller. Nov., 609-631
- Area of reservation 610, 623-624
- Cattle ranching 623, 625, 627
- Caucasians on reservation **618**, **619**, 624
- Cultural disruption, effects of 610, 624, 627, 630-631
- Economics 614, 618, 625, 627
- Educational concerns 627, 630
- Fishing rights 625
- History: Land transactions with United States (1855, 1887) 624-625, social effects of 610, 624; Nomadic period 623, 624, 630
- Map 614
- Modernity, displays of **626**
- Officials, reservation 623-624, 625, 627, **628**
- Religion 630
- Timber 618, 627
- Tribal council 625; Chairman 627
- Tribes forming nation, number of 623
- Unemployment 627
- Water rights 625; Litigation 625
- Yakima Project (irrigation): Map 614
- Yakima River, Wash. 609-610, **628-629**; Irrigation 610; Water, source of 609-610
- Yakima Valley, Wash.: Washington's Yakima Valley. By Mark Miller. Nov., 609-631
- Climate 610, 615, 620
- Crops 610, 612, 615, 623; Apples 609, 610-611, **610-612**, 615, 617; Hops 617, 618, **620-621**; Mint 617; Production figures 610, 614, 617, 618
- Desert 609, **630-631**
- Labor force 609, 610, **611**, **612**, 618-619, 623
- Length of 624
- Livestock center, state 610
- Location 609
- Map 614
- Number of acres in production 610, 614
- Population 610
- Price of land (by acre) 615
- Sheep raising 631, **631**
- Soil, quality of 610
- Water source 609-610, 614, 625; Irrigation canals **609**, 610
- see also Yakima Indian Nation, outlined
- Yale University: Dinosaur research 158, 176
- Yallup, Bill 627
- Yellow onions: Harvest **778-779**
- Yellowstone Lake, Yellowstone National Park: Rangers 829, 838, 848, 849
- Yellowstone National Park, U. S.: Winterkeeping in Yellowstone. By R. Steven Fuller. Dec., 829-857
- Area 829
- Avalanche prevention 856

Earthquakes 832
Map 830
Regulations 842
Thermal areas: Food sources 839; Geysers 839, **844**, **845**; Hot springs **833**, 839, **843**, **845**, **848**; Insect life **845**, **848**; Moss growth 839, **845**; Mud pots 839, **857**
Visitors: Destruction by **845**; Number of **856**; Winter tours 830, 832, 849, **856**
Weather 829, 830; Annual snowfall 829; Seasonal changes 829, **848**, **856**
Wildlife 829, 832, 839, **856**; Bears 832, **835**, **838**, **856**; Buffalo 829, **836-837**, 839, **847**, **856**; Coyotes 839, **846**, **856**, bones **846**; Geysers threat to

839, **846**; Winterkill 839, **846**, **856**
Yellowstone Park Company 829
Yellowstone River, Yellowstone National Park, U. S. 829, 830, **840-841**; Grand Canyon of the 829, 832; Waterfalls 830
Yemen, People's Democratic Republic of 520
Yerkes, Robert and Ada 449
Yerkes Regional Primate Research Center, Atlanta, Ga. 451
Yesterday Lingers on Lake Erie's Bass Islands. By Terry and Lyntha Eiler. July, 86-101
Yorkshire (swine breed) **398-399**, **404**, **410**
Yost, Ed 860, 864-865, 870
Young, Gary **629**

Young, Gordon: *Norway's Strategic Arctic Islands* (Svalbard). Aug., 267-283
Young, Joseph **628**

Z

Zaharako Bros.: Columbus, Ind. **394**
Zamzam, Well of, Mecca, Saudi Arabia 585, 588, 597, **607**, **607**
Zeballos, Luis 815
Zenobia, Queen (Palmyra) 350-351
Zeus (Greek god) 75
Zipper factory: Macon, Ga. 225
Zupan, Tim 436
Zwinger (museum), Dresden, East Germany 709, 711, 713-714

INDEXING STAFF

JOLENE M. BLOZIS *Chief*
MARTHA K. HIGHTOWER *Assistant Chief*
GEORGE I. BURNESTON, III
ANNE K. MCCAIN
BRIT A. PETERSON
JESSICA C. TAYLOR
SARAH C. WERKHEISER



